THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

Telegrams—LANCET, WESTRAND LONDON *Telephones*—GERRARD 4314 & 4315 *Offices*—423, Strand, London, W.C. 2

No. XIX. OF VOL. I., 1921. **LONDON, SATURDAY, MAY 7, 1921.** **Pp. 120—Price 1s.**
No. 5097. Vol. CC. Founded 1823. Registered as a Newspaper. Published Weekly. Annual Subscription Inland £2 2s. Abroad £2 10s.

THIRD EDITION, REVISED. JUST PUBLISHED.

PRINCIPLES OF GENERAL PHYSIOLOGY.
By WILLIAM MADDOCK BAYLISS, M.A., D.Sc., F.R.S.,
Professor of General Physiology in University College, London.
With 261 Illustrations. 8vo. 28s. net.
Longmans, Green & Co., 39, Paternoster-row, London, E.C. 4.

THE SURGERY OF THE HEART.
By Sir CHARLES A. BALLANCE, K.C.M.G., C.B., M.V.O., M.S., F.R.C.S., Consulting Surgeon to St. Thomas's Hospital, &c.
Illustrated by 48 Figures. Demy 8vo. 10s. 6d. net.
Macmillan & Co.

ESSAYS ON THE SURGERY OF THE TEMPORAL BONE.
By Sir CHARLES A. BALLANCE, K.C.M.G., C.B., M.V.O., M.S., F.R.C.S., Consulting Surgeon to St. Thomas's Hospital, &c.
Illustrated by 125 Plates (40 in Colour) and 120 Figures.
In 2 Volumes. Medium 4to. Price 5 guineas.
Macmillan & Co.

BY W. SOLTAU FENWICK, M.D.

CANCER OF THE STOMACH.
362 pages. 10s. 6d.
ULCER OF THE STOMACH AND DUODENUM.
392 pages. 10s. 6d
J. & A. Churchill, 7, Great Marlborough-street, W. 1.

DYSPEPSIA: Its Varieties and Treatment.
Octavo, 455 pages. 13s. net.

Now Ready. Demy 8vo. Pp. xii. + 434. With 90 Illustrations and 7 Coloured Plates. Price 25s. net.

SYPHILIS AND VENEREAL DISEASES.
FOR STUDENTS AND PRACTITIONERS.
By C. F. MARSHALL, M.D., M.Sc., F.R.C.S., and E. G. FFRENCH, M.D., F.R.C.S. Edin., Lieut.-Col. R.A.M.C. (Ret.), late O.C. Military Hospital, Rochester Row, London.
Being the Fourth Edition of "Syphilology and Venereal Disease."
London: Baillière, Tindall & Cox, 8, Henrietta-st. Covent Garden, W.C. 2.

SECOND EDITION. Demy 8vo. 280 pp. 36 Plates, 93 Illus. 10s. 6d. net.

A TEXT-BOOK of RADIOLOGY (X-RAYS).
By E. REGINALD MORTON, M.D., C.M., F.R.C.S.
"Can be confidently recommended."—ARCHIVES OF RADIOLOGY.
Henry Kimpton, 263, High Holborn, London, W.C. 1.

Just Ready Cr. 8vo. 404 pp. 11 plates, 76 Illus. 10s. 6d. net (by post 11s.)

ESSENTIALS OF MEDICAL ELECTRICITY
By ELKIN P. CUMBERBATCH, B.M., B Ch., M.R.C.P.
FIFTH EDITION, REVISED AND ENLARGED.
Henry Kimpton, 263, High Holborn, London, W.C. 1.

ANGINA PECTORIS.
WALTER VERDON, F.R.C.S.
This work introduces abundant proof that angina pectoris arises not from the heart but from the stomach, and lays down rules of successful treatment.
The Rt. Hon. Sir CLIFFORD ALLBUTT.—"*I see much of great interest in your beautifully printed work.*" ..... "*In my own work I was hankering after some accommodation between your view and my own.*"
Sir JAMES MACKENZIE.—"*A storehouse of facts and observations of the greatest value.*" ..... "*A classic.*"
B.M.J.—"*A mass of material.*" MED. TIMES.—"*Wealth of practical detail.*"
Moulton, 4, Church-street, Brighton. Demy 8vo. Pp. 414. 18/6.

BY H. WANSEY BAYLY, M.C.,
Hon. Sec. Society for the Prevention of Venereal Disease; late Pathologist to the London Lock Hospitals; Medical Officer in Charge Venereal Department, St. George's Hospital, &c.

VENEREAL DISEASE:
ITS PREVENTION, SYMPTOMS, AND TREATMENT.
54 Illustrations. Price 10s. 6d J. & A. Churchill, London.

THE LANCET, 1920: "The student will welcome the book as a crisp and well-arranged summary from which a concise knowledge may be gained."

MEDICAL PRESS, 1920:—"A succinct and practical volume which cannot fail to appeal to those for whom it is intended ... a work which in size, conciseness, and practical teaching admirably fulfils its purpose."

MEDICAL OFFICER, 1920:—"Those engaged in V.D. Clinics or about to take up such appointments could hardly do better than take this book as an introduction to the work, while the busy practitioner will find it invaluable for the treatment of venereal diseases in his private practice."

JUST ISSUED.

SURGICAL CLINICS
OF NORTH AMERICA
PHILADELPHIA NUMBER.

See Saunders' Advertisement on Page 5.

NOW READY.

INTRINSIC CANCER OF THE LARYNX
AND THE OPERATION OF LARYNGO-FISSURE.
By IRWIN MOORE, M.B., C.M. Edin., Surgeon to the Hospital for Diseases of the Throat, Golden Square, W.

With 46 illustrations specially drawn by Mr. Thornton Shields, under the author's immediate supervision. Royal 8vo. Cloth. 20s. net.

University of London Press, Ltd., 18, Warwick-square, E.C. 4.

BY CHARLES J. HEATH, F.R.C.S., Consulting Aurist, Metropolitan Asylums Board; late Surgeon, Throat Hospital, Golden Square, London.

OTITIS MEDIA (MASTOID DISEASE):
ITS SYMPTOMS, DIAGNOSIS, PROGNOSIS AND TREATMENT BY MODERN METHODS, thus saving the hearing of the discharging ear with perforated drumhead.

"We have no hesitation in describing Heath's paper as epoch-making."—ST. BARTHOLOMEW'S HOSPITAL JOURNAL.

"As long ago as 1906 he expounded his views upon the cure of chronic suppuration of the middle ear without the removal of the drum or ossicles, or loss of hearing. Since then he has made the matter his constant study and observation, proving conclusively the value of the conservative mastoid operation which he introduced."
—MEDICAL PRESS.

5s. net. Also
THE NATURE AND CAUSES OF CATARRHAL "THROAT," or Hereditary Deafness (The Relief of Tinnitus Aurium). A New method of treatment, with some illustrative cases. (New Edition in Preparation.)

Baillière, Tindall & Cox, 8, Henrietta Street, Covent Garden, London, W.C. 2.

OXFORD MEDICAL PUBLICATIONS.

THE PSYCHOLOGY OF THE SPECIAL SENSES AND THEIR FUNCTIONAL DISORDERS.
By ARTHUR F. HURST, M.A., M.D. Oxon., F.R.C.P., Physician and Neurologist to Guy's Hospital.
Demy 8vo. Cloth. Pp. 138. Illustrated. Price 12s. 6d. net.

SURGICAL ASPECTS OF DYSENTERY, INCLUDING LIVER ABSCESS.
By ZACHARY COPE, B.A., M.D., M.S. Lond., F.R.C.S. Eng., Surgeon to Out-patients, St. Mary's Hospital; Surgeon to the Bolingbroke Hospital; Hunterian Professor, R.C.S., &c.
Demy 8vo. Cloth. Containing 2 Colour and 19 Black and White Illustrations. Pp. x. + 158. 12s. 6d. net.

SKIN DISEASES IN GENERAL PRACTICE
THEIR RECOGNITION AND TREATMENT.
Second Edition.
By HALDIN DAVIS, M.R.C.S., L.R.C.P., Dermatologist to the Royal Free Hospital and Lecturer on Diseases of the Skin to the London School of Medicine for Women.
Demy 8vo. Cloth. Fully Illustrated in Colour and Black-and-White.

THE CARE OF HUMAN MACHINERY
By R. M. WILSON, M.B., Ch.B.
Crown 8vo. Cloth. Illustrated. Price 10s. 6d. net.

HENRY FROWDE and HODDER & STOUGHTON, The *Lancet* Building 1 & 2, Bedford Street, London, W.C. 2.

FOR THE MEDICAL AND SURGICAL PROFESSIONS
THERE IS NO BETTER SOAP THAN

COOK'S "ASEPSO" (REGD.)

THE GOLD MEDAL ANTISEPTIC SOAP (containing 3% Biniodide of Mercury).

THE MOST POWERFUL GERMICIDAL SOAP,
especially recommended for ECZEMA and RINGWORM Cases.

Indispensable to the Doctor for Sterilizing the Hands.

EDWARD COOK & CO. Ltd., Bow, LONDON, E.3.

USE LESLIES' ZŌPLA (ZINC OXIDE PLASTER)

A PERFECT STRAPPING

ZŌPLA is tenaciously Self-adhesive, will not slip, will stand any strain imposed on it, is Antiseptic, and is absolutely Non-irritating. The Sale is steadily growing. British Made.

Supplied on White and Flesh-colour Cloths, also on Holland, on Spools ½" to 4", 5 or 10 yard lengths, in rolls 7" and 12" wide. Also on moleskin, chamois leather, felts, and waterproof cloth. **SAMPLES ON REQUEST.**

ZŌPLA is made by the firm with the reputation for BROWN HOLLAND STRAPPING (Original make).

Telephone—Walthamstow 688

LESLIES LTD., High Street, Walthamstow, LONDON, E.17

NOVARSENOBENZOL, 914

SIMPLICITY. supplied in **EFFICIENCY.**

FOR INTRAMUSCULAR INJECTION

AMPSYRING

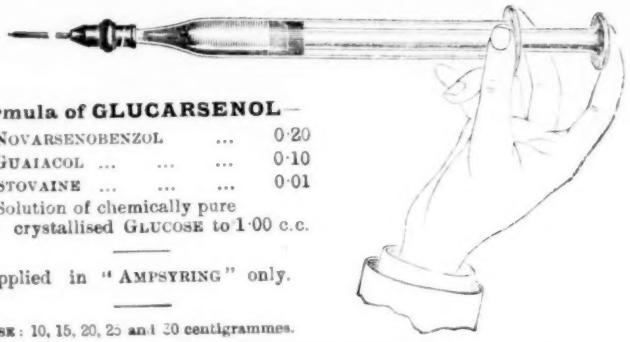
GLUCARSENOL

PREPARED BY ROBERT & CARRIÈRE PARIS.

(GLUCOSE SOLUTION OF NOVARSENOBENZOL IN AMPOULE-SYRINGE)

MODERN PHARMACALS, 48, MORTIMER STREET, LONDON, W.1.

NO PREPARATION. NO CONTAMINATION.



Formula of GLUCARSENOL—

NOVARSENOBENZOL ...	0·20
GUAIACOL	0·10
STOVAINE	0·01

Solution of chemically pure crystallised GLUCOSE to 1·00 c.c.

Supplied in "AMPSYRING" only.

DOSE: 10, 15, 20, 25 and 30 centigrammes.

The AMPSYRING is a combined AMPOULE and SYRINGE.

INJECTIONS are PAINLESS.

ABSORPTION is QUICKER and more complete than OILY SOLUTIONS.

No Danger of Embolism.

Solution does not change or deteriorate.

MODERN PHARMACALS, 48, Mortimer Street, LONDON, W.1.

Telephone: MUSEUM 564. Telegrams: PHARMACALS, WESDO, LONDON.

THE LANCET.

No. 5097. LONDON, SATURDAY, MAY 7, 1921. Vol. CC.

CONTENTS.

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

THE GOULSTONIAN LECTURES on Glycæmia and Glycosuria. Delivered before the Royal College of Physicians of London on March 1st, 1921, by GEORGE GRAHAM, M.A., M.D., F.R.C.P., Second Assistant, Medical Clinic, St. Bartholomew's Hospital.—Lecture I.—(*Illustrated*) 951

ORIGINAL ARTICLES.

A Simple Quantitative Serum-Reaction for the Diagnosis of Syphilis and the Expression of Results in Standard Units. By GEORGES DREYER and HUGH KINGSLEY WARD.—(*Illustrated*) 956

A Report on the First Year's Work of a Clinic for Syphilitic Children. By REGINALD C. JEWESBURY, M.A., M.D., F.R.C.P. 962

Similarity of Effects Produced by Absence of Vitamins and by Exposure to X Rays and Radium. By W. CRAMER, D.Sc., Ph.D., M.R.C.S., A. H. DREW, D.Sc., and J. C. MOTTRAM, M.B., D.P.H. 963

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A Note on Artificial Respiration in the New-Born. By W. OSBORNE GREENWOOD, M.D., B.S.—(*Illustrated*)..... 964

A Case of Acetanilide Poisoning: Recovery. By HASSAN EL ARCULLI, M.B., M.R.C.S., D.P.H. 965

A Case of Aberrant Herpes. By G. DE BEC TURTLE, M.D., M.R.C.P. — (*Illustrated*)..... 965

MEDICAL SOCIETIES.

Bristol Medico-Chirurgical Society: Surgery of the Thyroid Gland 966

Norwich Medico-Chirurgical Society: Exhibition of Cases and Specimens 966

Devon and Exeter Medico-Chirurgical Society: Nature and Treatment of Surgical Shock 966

Royal Medico-Chirurgical Society of Glasgow: A Series of 50 Consecutive Cæsarean Sections without Fatality 967

REVIEWS AND NOTICES OF BOOKS

Collected Papers of the Mayo Clinic. Edited by Mrs. M. H. Mellish. Vol. XI..... 967

Die Konstitutionelle Disposition zu Inneren Krankheiten. Second edition. Von Dr. Julius Bauer..... 968

The Medical Treatment of Disease. By Robert Dawson Rudolf, C.B.E., M.D., F.R.C.P. 968

Principles of General Physiology. Third edition. By William Maddock Bayliss, M.A., D.Sc., F.R.S. 968

Diagnostische Winke für die tägliche Praxis. Second edition. Von Dr. E. Graetzer 969

Lehrbuch der Differentialdiagnose innerer Krankheiten. Second edition. Von Prof. Dr. M. Matthes.. 969

Notes on Midwifery. Second edition. By J. M. Munro Kerr, M.D., and James Hendry, M.A., B.Sc., M.B.... 969

The Practice of Medicine. Fourteenth edition. By Professor James M. Anders, M.D., Ph.D., LL.D..... 969

Man's Descent from the Gods. By Anthony M. Ludovici.... 970

Quaker Aspects of Truth. By E. Vipont Brown, M.D..... 970

Brain..... 970

Military Surgeon..... 971

NEW INVENTIONS.

A Urethral and Sinus Drainage Bougie (Dr. Henry Dutch).—(*Illustrated*) 971

A Tube for Bladder Drainage (Mr. Jas. B. Macalpine).—(*Illustrated*) 971

FRENCH SUPPLEMENT TO THE LANCET.

Under the Editorial Direction of Professor CHARLES ACHARD and Dr. CHARLES FLANDIN, D.S.O.

Methods of Hysterectomy. By E. DOUAY.—(*Illustrated*) 973

Subtotal Hysterectomy: Faure's Operations of Hemisection and Decollation. By E. DOUAY.—(*Illustrated*) 974

Endowment of Motherhood in France 976

THE SERVICES.

Royal Naval Medical Service 993

Royal Army Medical Corps.... 993

Royal Air Force..... 993

LEADING ARTICLES.

SAFE CONDUCT OF LABOUR.. 977

INDUSTRIAL MORBIDITY 978

PRURITUS ANI..... 978

ANNOTATIONS.

The Severest Anæmias..... 979

Natural Health Centres..... 980

Advisory Committee on the Welfare of the Blind 980

Oxygen Insufflation in Morphine Poisoning..... 980

The Trend of Food Prices 981

Stab Wound of Both Ventricles: Recovery..... 981

Splenomegaly 981

Pulmonary Tuberculosis and Life Assurance 982

Hospitals and Income-tax 982

A French Review of Surgical Progress..... 982

The Newly Constituted Central Midwives Board.... 983

The Rôle of the Nervous System in Body Temperature Regulation 983

The Annual Meeting of the British Medical Association 984

Cancer in Animals..... 984

The Cassel Hospital 984

SPECIAL ARTICLES.

Medical Statistics 985

The Horsley Memorial 988

Urban Vital Statistics 988

CORRESPONDENCE.

The Question of a Trade-Union in Medicine (Dr. W. D. Anderson)..... 989

The Internecine Venereal Campaign (Lord Gorell)..... 989

The Treatment of Diabetes Mellitus (Dr. O. Leyton)..... 989

The Hygiene of the Sailor (Dr. Leonard L. Burton)..... 990

Medical Cooperation in Sheffield (Prof. A. J. Hall).. 990

Intravenous Injection of Stibenyl in Kala-Azar (Dr. Philip Manson-Bahr) 991

Teaching of Obstetrics in India 991

"Life after Death" 992

The Diet of the Weanling (Dr. Harry Campbell)..... 992

The Buff Book (Mr. Fred. Bullock)..... 1001

OBITUARY.

Henry Edward Juler, F.R.C.S. 993

Arthur F. Dobbs, M.B., B.Ch. 993

Frederick H. Pickin, M.R.C.S. 993

William H. Woodger, L.R.C.P., L.R.C.S., L.F.P.S. 993

PARLIAMENTARY INTELLIGENCE.

House of Lords: Public Health (Tuberculosis) Bill 994

House of Commons: Grouping of Medical Appeal Boards.—Medical Equipment of Auxiliary Division, R.I.C.—Proposed Reduction of Government Medical Staff 994

MEDICAL NEWS.

University of Cambridge: Degrees conferred..... 996

University of London: Election of Senate.—The Graduation Dinner..... 996

Royal College of Physicians of London..... 996

Royal Colleges of Physicians of London and Surgeons of England: Pass-list..... 996

British Spa Federation..... 961

Presentation to a Medical Man 965

Literary Intelligence 972

Liverpool Maternity Hospital 992

Rontgen Society..... 996

Post-graduate Course of Instruction in Treatment of Venereal Diseases 996

Guild of Blind Gardeners..... 997

Federation of Medical and Allied Societies..... 997

National Council for Combating Venereal Diseases.. 997

Chartered Society of Massage and Medical Gymnastics .. 997

Harveian Society..... 997

Glasgow University Club, London 997

Liverpool Samaritan Hospital for Women..... 997

Norfolk and Norwich Hosp. 997

Donations and Bequests 997

Ancoats Hosp., Manchester 998

NOTES, SHORT COMMENTS, &c.

A Catalogue of Early Medical Works..... 1000

Typhus in Siberia, 1919–20.... 1000

A Handbook for the Limbless 1000

Convalescent Home for Middle-class Wives and Babies 1001

The Lighting of Ships..... 1001

Caravan Squatters 1001

Central Council for District Nursing in London..... 1002

How Not to Prepare a Medical Article 1002

A Memorial to the late Dr. Ernest Roberts..... 1002

Colonial Health Reports 1002

Books, &c., received..... 995

Communications received.... 998

Medical Diary..... 998

Appointments, Vacancies..... 999

Births, Marriages, & Deaths 999

Text-Book of Tracheo-Bronchoscopy (Technical and Practical). By Dr. **M. MANN.** Translated by A. R. MOODIE, M.A., M.D., Ch.B., F.R.C.S. With 50 Illustrations, 5 Plates in the Text, and 10 Coloured Plates in the Appendix. Cr. 4to. 31s. 6d. net, postage 1s.

"Excellent."—THE LANCET.

"A very readable book."—PRESCRIBER.

Diseases of the Newborn. By Dr. **AUGUST RITTER VON REUSS.** Translation revised by JOHN D. ROLLESTON, M.D., B.Ch., M.A., Editor of the *British Journal of Children's Diseases*. With 90 Illustrations. Royal 8vo. 52s. 6d. net, postage 1s. 6d.

"A unique book ..... constitutes a valuable contribution to the literature of pædiatric science and practice. ..... His pages shed a flood of light on many obscure corners in the pathology of the newborn infant. ..... Nothing, in fact, has been omitted which is likely to be required by the medical man. ..... Well illustrated by means of beautifully coloured plates. ..... The translation is without fault."—MEDICAL WORLD.

A Study in the Epidemiology of TUBERCULOSIS. With Special Reference to Tuberculosis of the Tropics and of the Negro race. By **GEORGE E. BUSHNELL,** Ph.D., M.D., Colonel, United States Army (Medical Corps), retired. Demy 8vo. 20s. net; postage 1s.

"He has put forward many cogent arguments in favour of an hypothesis which, if it prove correct, would greatly simplify the campaign against tuberculosis."—THE LANCET.

DELAFIELD and PRUDDEN'S

Text-Book of Pathology. With a Final Section on Post-Mortem Examinations, and the Methods of Preserving and Examining Diseased Tissues. Eleventh Edition, revised by FRANCIS CARTER WOOD, M.D. With 15 Full Page Plates and 809 Illustrations in the Text, in Black and Colours. Super Royal 8vo. 63s. net, postage 1s. 3d.

"As a standard text-book, or merely as a work of reference, this volume is one which will give every satisfacti n ..... one of the best pathological treatises in the English language."—PRESCRIBER.

JOHN BALE, SONS & DANIELSSON, LTD., 83-91, Great Titchfield Street, London, W. 1.

BAILLIÈRE, TINDALL & COX'S
BOOKS FOR STUDENTS.

Blair Bell's THIRD EDITION.
PRINCIPLES OF GYNÆCOLOGY
Pp. xxviii. + 660, with 7 Coloured Plates and 392 other Illustrations. 38s. NET.

Stedman's SIXTH EDITION.
MEDICAL DICTIONARY
Royal 8vo. Pp. 1160, with numerous Illustrations. 42s. NET.

Buchanan's FOURTH EDITION.
ANATOMY
(Systematic and Practical in One Volume.)
Pp. xii. + 1743, with 677 Illustrations, mostly original and in several Colours. 30s. NET.

Rose & Carless' TENTH EDITION.
SURGERY
By ALBERT CARLESS, F.R.C.S. Eng.
Pp. xii. + 1562, with 18 Coloured Plates and 600 Illustrations. 30s. NET.

Jellett's THIRD EDITION.
MIDWIFERY
Revised by HENRY JELLETT, M.D., and DAVID G. MADILL, M.B., B.Ch., B.A.O. (Dublin Univ.).
Pp. xii. + 1256, with 20 Plates and 540 other Illustrations. 42s. NET.

Green's TWELFTH EDITION.
PATHOLOGY
Revised and Enlarged by
W. C. BOSANQUET, M.D., and W. W. C. TOPLEY, M.B. Pp. x. + 603, with 4 Coloured Plates and 243 other Illustrations. 22s. 6d. NET.

Stewart's EIGHTH EDITION.
PHYSIOLOGY
Pp. xxiv. + 1245, with Coloured Plate and 492 other Illustrations, Plain and Coloured. 21s. NET.

Monro's FOURTH EDITION.
MEDICINE
Pp. xxiv. + 1045, 47 Figures, Plain and Coloured. 21s. NET.

May & Worth's FOURTH EDITION.
Diseases of the EYE
Pp. viii. + 444, with 337 Figures (22 Coloured). 18s. NET.

Solomons' A NEW WORK.
HANDBOOK OF PRACTICAL GYNÆCOLOGY
Pp. xii. + 236, with 96 Illustrations. 12s. NET.

Orrin's A NEW WORK.
SYSTEMIC ARTERIES
An X-Ray Atlas showing the Systemic Arteries in continuity, and precisely as they exist *in situ* in the undissected body.
4to, pp. viii. + 92, with 21 Original Plates and Illustrations. 12s. 6d. NET.

SECOND EDITION.
Schmieden & Turnbull's
OPERATIVE SURGERY
Pp. x. + 350, with 436 Illustrations, many in Colours. 25s. NET.

BAILLIÈRE, TINDALL & COX, 8, Henrietta Street, Covent Garden, London, W.C. 2.

The Goulstonian Lectures

ON

GLYCÆMIA AND GLYCOSURIA.

Delivered before the Royal College of Physicians of London on March 1st, 1921,

BY GEORGE GRAHAM, M.A., M.D. CANTAB., F.R.C.P. LOND.,

SECOND ASSISTANT, MEDICAL CLINIC, ST. BARTHOLOMEW'S HOSPITAL; ASSISTANT PHYSICIAN, GREAT NORTHERN CENTRAL HOSPITAL.

LECTURE I.

I WISH, first of all, to express my thanks to the Royal College of Physicians for the great honour which it has done me in selecting me to be Goulstonian lecturer for this year. Secondly, I wish to commemorate the name of Theodore Goulston, a Fellow of this College, who in 1632 bequeathed some property in Essex in order to found this lectureship. The first lecture was given in 1639, and, except for a few breaks owing to wars and other causes, it has been given annually since that time. When Dr. Goulston died in 1632 the study of diabetes was still in its infancy, as Thomas Willis was then only a boy of 12, and it was not until 1674 that he observed that the urine of diabetic patients had a sweet taste. Willis was not the Goulstonian lecturer, and, as far as I can ascertain, diabetes has only been the subject of these lectures on three occasions—by Dr. F. W. Pavy in 1863, by Dr. W. C. Bosanquet in 1905, and by Dr. E. P. Poulton in 1918.

Although it is only three years since my friend and co-worker on other subjects, Dr. Poulton, was Goulstonian lecturer, I do not feel that I owe you any apology for talking about diabetes again, as Dr. Poulton was chiefly concerned with the questions of acidosis and ketosis, while I shall approach the subject by considering the fate of the sugar which is present in the blood. In the second lecture I shall speak of the different types of diabetes, and in the third describe the principles on which the modern treatment is based.

THE FATE OF THE SUGAR PRESENT IN THE BLOOD.

The presence of sugar in the blood was demonstrated by Claude Bernard, and the amount of sugar which is normally present in the blood has been estimated by many observers and by many methods. Pavy's statement,[1] that for animals, dogs, &c., the usual amount varied from "0·06 to 0·10 g. or a little more" has been substantiated by recent workers using much simpler methods. The figure given for the amount which is usually present in the healthy fasting adult is 0·08 to 0·12 g. per cent.

One great question which concerned Pavy[2] was why this sugar was not excreted in the urine. He showed that as a matter of fact sugar was excreted in the urine of all healthy adults in very small amounts. He estimated that it was present in a concentration of less than 0·03 per cent. Such an amount is not sufficient to give a positive result with Fehling's solution or with Benedict's solution, as the latter only gives a positive result in a concentration of 0·08 per cent. Recently Benedict and Osterberg[3] have found that sugar is always present in the urine in small amounts up to 0·01 per cent. In two cases which were very carefully investigated the total amounts excreted were 1 g. and 0·5 g. per day. Pavy sought to explain the absence of sugar in the urine in appreciable amounts by supposing that the sugar was carried by the leucocytes. Others have supposed that the sugar was present in a colloidal combination and not as a crystalloid.

In 1908 Michaelis and Rona[4] found that the sugar could be diffused away from the cells and that the sugar must be in a state of solution. This was confirmed in 1914 by Abel, Rowntree, and Turner,[5] who showed that if the blood was allowed to circulate through a celloidin tube inserted into the general circulation of the animal the sugar diffused out from the blood into the fluid surrounding the celloidin tube. The sugar is therefore present in the blood as a crystalloid.

Until 1908 it was accepted that sugar was present in the plasma and not in the corpuscles, but in that year Michaelis and Rona,[6] working on dogs, found that the sugar was shared in unequal and inconstant amounts between the corpuscles and plasma. They repeated and extended their observations, which were confirmed by all other workers on this subject except Lyttgens and Sandgren[7] and Bang.[8] Bang and his pupils were unable to prepare an osazone from the corpuscles and challenged Michaelis and Rona to prepare one. It was also very extraordinary that in some animals—the dog, cat, and man—the sugar was apparently shared between the corpuscles and plasma, while in the rabbit it was all in the plasma.

In 1919 Falta and Richter Quittner[9] re-investigated the question and found that if they prevented coagulation of the blood by the addition of hirudin all the sugar was present in the plasma. If, however, other methods preventing coagulation were used—e.g., the addition of potassium oxalate or sodium citrate—or if the blood was defibrinated, the sugar was shared between the corpuscles and plasma. Falta found that this was true of the blood of all the usual laboratory animals. Confirmation of this work is forthcoming in the independent work of Brinkman and V. Davis,[10,11] which was published almost simultaneously. Brinkman was working on frog's blood, and with the use of hirudin he found that the sugar was always present in the plasma. When he extended his work to human blood he was not so successful as the hirudin he was using did not completely prevent the onset of coagulation. If any strands of fibrin were present the corpuscles contained sugar. However, by chilling the blood and bubbling an indifferent gas through the blood he was able to prevent any coagulation taking place and to demonstrate that all the sugar was present in the plasma.

The Hæmatocrit Method.

These observations are of great importance in the estimation of the sugar in the blood. The amount of sugar is always given in grammes per 100 c.cm. or per 100 g. of blood. But if the sugar is only present in the plasma this mode of presentation may be very misleading, as Falta points out, unless a simultaneous estimation is made of the respective volumes of plasma and corpuscles by the hæmatocrit method. This observation may affect the accuracy of determinations which are made from the blood obtained by pricking the finger when any squeezing is necessary to obtain the blood. It can be overcome by (1) warming the hand in hot water beforehand; (2) always pricking the finger deeply; and (3) correcting the result by doing a hæmatocrit determination. Unfortunately hirudin is unobtainable at present, and potassium oxalate must therefore be used instead in making the hæmatocrit determinations. A correction of 1–2 per cent. must be made, as the potassium oxalate gives too low a reading for the volume of the cells.

I have recently compared the blood from the vein with that obtained from the finger with the help of Dr. A. E. Gow. The figures for the red cells lay within the limits of experimental error, those for the hæmatocrit were identical, the figures for the blood sugar lay within the limits of experimental error. There is, therefore, no appreciable error in collecting blood from the finger. A more serious source of error may be variations in the volume of cells and plasma. Eppstein[12] found that the volume of plasma and corpuscles was not a constant one as it varied after a meal. He always made a hæmatocrit determination in order to correct for this variation. Recently Dreyer, Bazett, and Pierce[13] have shown that the proportion of plasma and corpuscles varies in a surprising way and makes it still more necessary to check the results with a hæmatocrit determination. The diurnal variations may be as much as 30 per cent., and a 10 per cent. change is quite common. The changes did not seem to bear any relation to meals.

The Nature of the Filter.

The mechanism by which the sugar is prevented from being excreted by the kidney still remains unexplained. According to Cushny's view of kidney functions, the sugar is passively filtered off from the blood together with the other constituents of the urine, and is reabsorbed lower down in the kidney tubules. On this hypothesis a great deal of work has to be done by the kidney in reabsorbing these substances, and as in some cases of diabetes, of which I shall speak later, the level of the blood sugar may rise to 0.30 g. per cent. without any sugar being excreted in the urine, the kidney must do a great deal of extra work.

Hamburger and Brinkman[14] have done some suggestive work on this point. They found that when they perfused the frog's kidney with ordinary Ringer's solution containing glucose all the sugar was excreted in the urine. By varying the potassium and calcium in the solution the excretion of the sugar ceased to be a quantitative one. By making the H.-ion concentration of the perfusing fluid correspond with that of frog's blood they found that the kidney did not allow any sugar to pass even if the concentration was over 0·10 per cent. The addition of lactose to the perfusing fluid was always followed by the excretion of lactose in the urine, although no glucose was excreted. These experiments at present lack confirmation, and the possibilities of error have not been exhaustively excluded, but they do offer an explanation of the different levels of the leak-point for sugar in human beings, to which I shall refer later.

Pavy[15] and all other workers on this subject up to 1911 believed that there was no increase of sugar in the blood after a heavy carbohydrate meal. It was believed that the liver was the organ which prevented the sugar from increasing in the general circulation. Pavy thought that if the liver failed to do its duty and allowed an increase of sugar in the blood, the sugar would instantly be excreted in the urine.

In 1911 Baudouin[16] examined his patients one hour after a meal and found that there was a slight increase in the amount of sugar. Frank,[17] Reicher and Stern[18] confirmed and slightly extended his observation. A. Th. B. Jacobsen[19] in 1913 pointed out that the rise in the blood sugar occurred much earlier than one hour, and might be present within five minutes of a dose of sugar. It usually reached its maximum 15–30 minutes after the sugar, and in 7 cases was back at its original level after 60 minutes. In 7 cases the fasting value was not reached until two to three hours afterwards. In 7 cases sugar was excreted, but the greatest amount excreted was 1·38 g. These observations have been confirmed by Bang and many others, including myself.

Variations in Individual Response to a Dose of Sugar.

The response of each individual to a dose of sugar is probably slightly different, and varies from time to time according to his state of health. I[20] have made six experiments on myself at different times, immediately before and after a holiday, and the variations are somewhat remarkable. All the estimations of the blood sugar were made by Bang's[21] methed, which with slight modifications in technique I have found very satisfactory when the difficulties over the impurities of the chemicals have been surmounted. The difference between the blood curves (Figs. 1 and 2) is very striking, and makes it much easier to understand why a diabetic passes sugar when he is upset by quite trivial ailments or troubles.

In considering the changes which take place in the percentage amount of sugar in the blood the total amount of sugar should also be considered. The volume of the blood is about $\frac{1}{13}$th of the total weight of the body, according to the recent work of Keith, Rowntree and Geraghty.[22] In the case of a man who weighs 65 kilos, or 10 st. 3 lb., the volume of the blood will be 5000 g. Since the average percentage amount of sugar in the blood is about 0·10 g. per 100 g. blood the total sugar circulating in the blood is 5 g. An increase in the blood sugar from 0·10 g. to 0·20 g. would mean that an extra 5 g. was circulating in the blood. A diabetic with a blood sugar of 0·40 g. present would have an extra 15 g. of sugar in the blood. The amount of sugar which can be stored in the blood is therefore very small, and this emphasises the delicacy of the mechanism by which sugar is absorbed into the body.

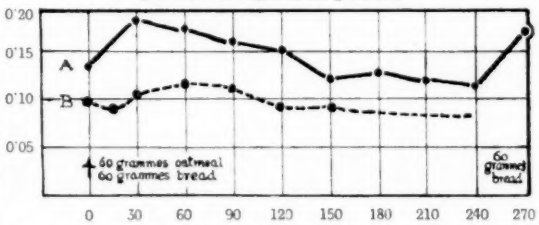
The increase in the blood sugar after each meal, which contains a fair amount of carbohydrate, shows that the liver does not prevent sugar from entering the peripheral circulation, and it is of interest to consider how much sugar the hepatic veins may contain. The blood in the portal vein after a meal is rich in sugar, but in its passage through the liver it is diluted with the blood from the hepatic artery. The blood leaves the liver by the hepatic veins, which join the inferior vena cava at once. The liver blood is there diluted at once with the blood from the lower limbs. A further dilution takes place almost immediately afterwards as the blood mixes in the heart with the blood in the superior vena cava. It is clear that the blood in the hepatic veins must contain more sugar than the diluted blood in the peripheral circulation, but it is not possible to say how much more, as measurements of the vessels after death are difficult to do, and no account is taken of the velocity of the blood flow.

The Destination of Blood Sugar.

The fact that the increase in the blood sugar takes place after each carbohydrate meal which is eaten arouses interest as to the destination of this sugar. None of the sugar is excreted in the urine so long as the amount of sugar does not rise above the "leak point" for the individual, and after circulating in the blood for a variable length of time the sugar disappears from the circulation. Some of the sugar is burnt at once as the respiratory quotient rises immediately after a carbohydrate meal and remains about 1·0 for some time, and then gradually falls. The rise and fall in the blood sugar is usually over in about one hour even if 100 g. is taken at one time. If all the sugar which disappears from the circulation in the hour were burnt in that time it would mean that 400 calories had been used in one hour from carbohydrates alone. As the subject of these experiments is usually a laboratory worker, and as he sits fairly still during that period it is hardly possible that all this amount of sugar could be burnt up. Moreover, Johanson[23] has shown that the increase in the output of carbon dioxide which occurs after a dose of sugar persists for a period of five to seven hours. Hence some of the sugar must be stored elsewhere in the body—i.e., in the liver, muscles, or elsewhere.

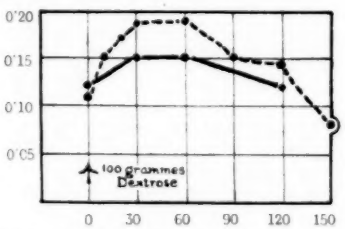
The amount of glycogen which is stored in these places may be considerable. Thus Schöndorf[24] estimated the amount of glycogen in the muscles and liver of seven dogs. In three dogs the muscles contained more sugar than the liver; in two dogs the muscles and liver contained about the same amount of sugar; in two dogs the muscles contained less glycogen than the liver.

In each of the charts the figures at the left side indicate grammes of sugar in 100 g. blood.



The figures at the foot of the chart represent minutes after meal.

FIG. 1 shows the effect of a carbohydrate meal consisting of 60 g. porridge, 60 g. bread, 150 c.cm. milk, on my blood (A) before and (B) after a holiday. Before the holiday the fasting value was 0·13 g. per cent., and 30 minutes later the sugar had increased to 0·18 per cent. The amount of sugar gradually decreased and reached 0·12 2½ hours later. After the holiday the fasting value was 0·095 g., and the rise in the blood sugar which took place ½ hour after the meal was small, and reached its maximum 0·11 g. after 1 hour. In this case the rise was 0·015, whereas before the holiday it was 0·05 g.



In Charts 2, 3, and 4 the figures at the foot represent minutes after injection of sugar.

FIG. 2 shows the effect of a dose of 100 g. of glucose six weeks and one week before another holiday. Six weeks before the holiday (continuous line) the rise in the blood sugar was 0·03 g. in 1 hour. One week before the holiday (dotted line) it was 0·07. On neither occasion when I was taking the holiday was I suffering, so far as I knew, from any illness, although on each occasion I had been working long hours in the laboratories and wards.

As the muscles contain so much glycogen it is possible that the "extra" sugar which is seen in the blood after a carbohydrate meal is on its way to the muscles. De Fillipi[25] has investigated the effect of shutting out the liver from the portal circulation by means of an Eck's fistula. He found that there was a small decrease in the tolerance for dextrose, but a larger decrease in the tolerance for lævulose.

Tolerance to Different Sugars.

Jacobsen[26] repeated these experiments on three dogs, making careful determinations of the tolerance for dextrose, lævulose, and saccharose before and after the operation.

Tolerance for—	Before operation.	After operation.
Dextrose	115 g.	80 g.
Saccharose	170 ,,	15 ,,
Lævulose	90 ,,	9 ,,

The decrease in the tolerance for dextrose is therefore small as compared with the decrease for lævulose.

Effect on the Liver.

De Fillipi did not make any pathological report on the state of the liver, but Jacobsen stated the liver in his dogs appeared small, hard, and tough; on microscopical section there was atrophy of the centre of the lobule and fatty degeneration. The effect of removing the liver from the portal blood flow, although it does diminish the tolerance for sugar, does not upset the metabolism as much as might be expected. Both De Fillipi and Jacobsen suggest that the muscles can assimilate the dextrose but that they cannot store the lævulose.

De Fillipi determined the amount of glycogen which was present in the liver and muscles of the Eck's fistula dogs. The figures show that the liver of the Eck's fistula dogs contain very little glycogen and resemble those for the liver of Pflüger's dog which had fasted for 28 days. The muscle contained a good deal of glycogen, and the amounts corresponded with those found in the muscles of dogs which had been well fed.

The tolerance for dextrose has been tested in diseases in which the liver has been grossly diseased, as in cirrhosis of the liver. Strauss[27] found that 90 per cent. of patients with diseases of the liver, such as cirrhosis, excrete lævulose after a dose of 100 g. of lævulose. Only 10 per cent. of healthy people excreted lævulose. The amounts of lævulose excreted are always small, usually about 1 per cent. of the dose. In acute phosphorus poisoning about 85 per cent. of the cases showed a diminished tolerance after a dose of 100 g. of sugar; the amount of dextrose excreted varied from 22 g. to mere traces.

The experiments in which the liver has been cut out of the portal circulation, and those in which the liver is seriously damaged in disease, show that the muscles play an important part in the storage of glycogen, and it is possible that the "extra sugar" in the blood after a carbohydrate meal is on its way to the muscles.

The effect of lævulose on the blood sugar in man was observed by Bergmark,[28] who found that practically no rise occurred after doses of 50 g.

This has been repeated by McLean and de Wessolow,[29] who gave similar doses. A dose of 50 g. caused a rise from 0·10 to 0·11, which is almost within the limits of experimental error. I had observed the effect of a still larger dose of lævulose, 100 g., as I have done most of my experiments on myself with that dose of dextrose. (Fig. 3.) The initial figure for the blood sugar was 0·095, and 30 minutes after the lævulose it had risen to 0·15; at the end of one hour it was still 0·145 g., at the end of two hours 0·115 g., at the end of three hours 0·125 g. At this point 100 g. of dextrose was taken; at the end of 15 minutes the sugar had risen to 0·15, at the end of 30 minutes to 0·195 g. During the first 40 minutes after the lævulose 0·15 g. of a reducing substance was excreted in the urine. This substance was lævorotatory and was probably lævulose. In the next 2 hours and 40 minutes 0·07 g. of a similar lævorotatory substance was excreted in the urine. In the hour after the dextrose no reducing substance was excreted in the urine. Using a dose of 100 g. of lævulose the rise in the blood sugar was 0.055 g. compared with the rise of 0·01 observed by Bergmark after 50 g., and is only a little smaller than the rise after the dextrose of 0·075 g. The significant point is that the lævulose was excreted, although the blood sugar was never above 0·15 g., whereas the dextrose caused a rise to 0·195 without causing any excretion of dextrose. On another occasion 100 g. of lævulose caused a similar rise and the reducing substance gave Seliwanow's test for lævulose.

Woodyat, Sansun, and Wilder[30] have also made experiments which show the difference between lævulose and dextrose.

By means of an ingenious apparatus they have injected sugar solutions continuously into veins. They were able to inject dextrose at the rate of 0·8 to 0·9 g. per kg. per hour into dogs and men without causing any glycosuria. In the case of a man of 65 kg. 52 g. of dextrose could be injected each hour. For lævulose the figures are much lower as only 0·15 g. per kg. per hour or 9·7 g. for a man of 65 kg. could be injected without causing glycosuria. The difference between the dextrose and lævulose is therefore very great, and coupled with the other work suggest that the lævulose is normally dealt with in the liver, but that if there is any appreciable escape into the peripheral blood some sugar is excreted by the kidneys. On this hypothesis lævulose occupies the position that dextrose held in the mind of Pavy.

Pavy[31] pointed out that the blood in the peripheral circulation contained very little more sugar after hydrolysis with sulphuric acid, whereas the blood in the portal vein showed a considerable increase. He considered that the liver prevented the entrance of this hydrolysable sugar into the peripheral blood. Cammidge[32] has recently confirmed these observations and he believes that this substance is similar to a dextrin.

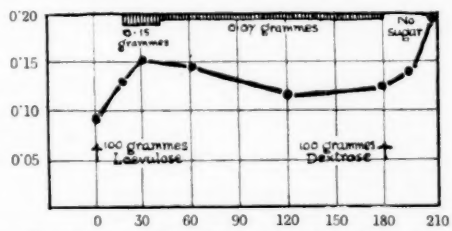


FIG. 3.—Showing the effect of 100 g. of lævulose on the level of the blood sugar, compared with the effect of 100 g. dextrose.

The especial functions of the liver seem to be: (1) preventing the hydrolysable sugar from entering the general circulation; (2) storing up the lævulose.

Ivan Bang[33] has made many experiments to try and discover the fate of the extra sugar which is seen in the blood after a carbohydrate meal. He fed rabbits with sugar and also injected sugar intravenously. The rabbits were killed half to two hours afterwards and the total amount of sugar and glycogen which was present in the body was determined. In these experiments, in which the sugar was given through a stomach tube, the total amount of sugar or glycogen found in the liver, blood, and lymph varied from 6·2 per cent., 22·9 per cent., 28·7 per cent. of the sugar which had been absorbed. After intravenous injections of sugar Bang found that although the animal was killed at once the amount of sugar in the liver immediately after the injection was only 8–12 per cent. of the injected sugar. The blood contained 7·5–11 per cent. of the injected sugar and the muscles only 5 per cent. Although Bang examined the whole body he was unable to recover more than 48–75 per cent. of the sugar which had been injected. In the experiment in which 75 per cent. was recovered, 30 per cent. of the sugar was still in the blood.

The Liver Not the Chief Storehouse for Sugar.

These experiments confirm the other experiments which I have quoted and show that the liver is not the chief storehouse for sugar in the body. The complete disappearance of 25–50 per cent. of the sugar which has been injected is most remarkable and suggests that the sugar has been converted into another compound which escapes detection.

This work has been repeated by Kleiner,[34] who found that he could not recover the sugar injected. He also injected dead animals and found that the sugar disappeared from the blood in the same way as it does in live animals. In dead animals, however, the sugar was present in the body fluids and muscles and could be recovered. In living animals he found some evidence that a condensation of the sugar took place in the muscles. The work of Cohnheim[35] on the effect of muscle juice on sugar in the presence of pancreatic juice bears on this point. He showed that if suitably prepared muscle juice was allowed to act on sugar under strictly aseptic precautions a small amount of sugar disappeared. The addition of pancreatic extract in suitable amounts increased the effect of the muscle juice, but excess of pancreatic extract prevented the action. The pancreatic extract did not act like a ferment as it was not destroyed by heating and could also be extracted with alcohol. These results were contradicted by Claus and Emden,[36] but

Cohnheim repeated his experiments with many precautions and obtained a similar result. These experiments have been confirmed by de Witt[37] and others, but they are especially supported by Hall's[38] work. He found that the best results were obtained when the alcoholic extract of the pancreas was used, and that 25 per cent. of the sugar might disappear. The mixture of muscle juice and pancreas extract could only act on dextrose, and could not attack arabinose, lævulose, or lactose. Levene and Meyer[39] confirmed Hall's results, and showed that the sugar which had disappeared could be recovered by boiling the mixture with hydrochloric acid for an hour. This experiment showed that the sugar had not been used but stored away. They were also able to isolate a biosazone from the mixture. Their work is good evidence that a condensation product had been formed by the interaction of the muscle juice and pancreatic extract. Cohnheim's substance must therefore be accepted as an important agent in the storage of sugar in the muscle. This work suggests that the sugar which Bang[33] was unable to recover after the injection of sugar into animals has been stored as a condensation product in the muscle.

The problem has also been investigated by perfusing the living heart muscle with solutions containing sugar. The work is difficult, as the experiments may be invalidated by the amount of glycogen which the heart muscle contains and by bacterial action, &c.

Owing to some of these causes the earlier work is unreliable, but Cruikshank and Paterson[40] were able to show that the heart of a healthy dog burnt sugar at the rate of 1·87 mg. per kg. of heart muscle, whereas the heart of the diabetic dog burnt sugar at the rate of 0·9 mg. per kg.

Starling and Lovatt Evans[41] found that the respiratory quotient of the diabetic heart was 0·71 instead of 0·85 for the healthy heart, showing that there was a depression or abolition of the power of the diabetic muscle to use carbohydrate. They found that an acid extract of the pancreas very occasionally enabled the diabetic heart to use more sugar and sent up the respiratory quotient. More recently Clark[42] has repeated this work, using special precautions to prevent the destruction of sugar by bacterial action in the perfusing fluid. He found that on perfusing the healthy heart very little sugar disappeared in the first two hours, but that in the third and fourth hours a considerable amount of sugar disappeared. If, however, the pancreas was brought into the circulation the sugar began to disappear at once. The sugar could not be recovered by heating with hydrochloric acid, as in Levine and Meyer's work. Perfusion through the pancreas did not seem to alter the sugar in any way, and it is suggested that the perfusing fluid picked up something from the pancreas which enabled the muscle to use the sugar. Since the perfusing fluid lost its power after boiling or standing it seems probable that the active substance is a ferment.

Hedon[43] made some important observations on the diabetic animal. If large amounts of healthy blood are given to a diabetic dog there is a decrease of the sugar output and a fall in the level of the blood sugar, but the effects were very transient. The effect of connecting the pancreas of a healthy dog with the peripheral circulation of the diabetic dog was next investigated, but did not cause more effect than the transfusion of blood had done. If, however, the healthy pancreas was connected with the portal circulation the results were very striking, as the glycosuria disappeared and the blood sugar decreased. These effects persisted for a little while after the transfusion had ceased. This observation suggests that the pancreatic hormone can only act if it has passed through the liver, and it is of interest to remember that all the opposing group of glands discharge into the peripheral circulation.

The Relations of Liver and Pancreas.

Cammidge[44] has recently made some experiments which bear on the relations of the liver and pancreas.

He estimated the amylolytic ferment in the blood—the increase in the reducing power of the blood—after hydrolysis, which he called the "difference value" and the blood sugar. The effect of a carbohydrate meal was observed on all these substances in patients with diseases of the pancreas and in dogs which had had varying amounts of the pancreas removed.

In patients with disease of the pancreas and in dogs in whom two-thirds or less of the pancreas had been removed there is a great increase in the "difference value" and of the amylolytic ferment of the blood of the fasting patient or dog. The carbohydrate meal causes a great fall in the "difference value," but an increase in the amylolytic ferment and in the blood sugar. This lasts for some hours and then the "difference value" rises again and the others fall. If the whole of the pancreas is removed the "difference value" is low, but the amylolytic ferment and blood sugar are higher than ever.

These experiments show that the amylolytic ferment is not secreted by the pancreas, as it was present in the greatest amount when the pancreas was completely removed. It is, therefore, suggested by Cammidge that the amylolytic ferment is formed in the liver and that its production is under the control of the pancreas. A diminution in the pancreatic function allows either an increase in the production or perhaps an escape of the amylolytic ferment into the blood. This part of the work agrees therefore with Hedon's observation on the necessity of the perfusing blood passing through the liver.

The significance of the "difference value" is much more difficult to appraise. It is present in the fasting blood in the largest amount when the pancreas is slightly damaged and in smallest amount when the pancreas is intact or absent. It decreases with the increase in the amylolytic ferment and increases with the fall of the amylolytic ferment, and is therefore in some way dependent on the activity of this ferment.

The work of Dakin and Dudley[45] on glyoxalase is also very important. They found that the liver, muscles, and blood of all animals contain a thermo-labile ferment called glyoxalase which is capable of converting methyl glyoxal into lactic acid. The pancreas, however, contained a ferment which could inhibit the action of the glyoxalase. This antiglyoxalase is water-soluble and thermo-labile, is present in pancreatic extracts and also in the pancreatic juice. The blood of muscles of diabetics, however, had less glyoxalase than usual.

If this work of Cohnheim, Clark, Dakin, and Dudley is correct the problem is an extremely complicated one. We know at present three substances which seem to play an important part. Cohnheim's substance, which is thermo-stabile, soluble in alcohol, and inhibited by trypsin, is apparently necessary for the storage of sugar in the muscles. Dakin and Dudley's substance, which is thermo-labile, water-soluble, unaffected by trypsin, is apparently necessary to prevent the conversion of the muscle sugar into lactic acid. Clark's substance, which is thermo-labile, water-soluble (and in diabetic animals must pass through the liver as well) is necessary to enable the muscles to burn the sugar. The three substances are here shown in tabular form:—

COHNHEIM'S SUBSTANCE.	DAKIN AND DUDLEY'S ANTI-GLYOXALASE.	CLARK'S SUBSTANCE.
Thermo-stabile. Soluble in alcohol. Inhibited by trypsin. Necessary for storage of sugar in muscles.	Thermo-labile. Soluble in water. Unaffected by trypsin. Necessary to prevent conversion of muscle sugar into lactic acid.	Thermo-labile. Water soluble. Necessary to enable the muscles to burn sugar.

The evidence which I shall bring forward in my next lecture from the consideration of the effect of a small dose of sugar on mild cases of diabetes suggests that the

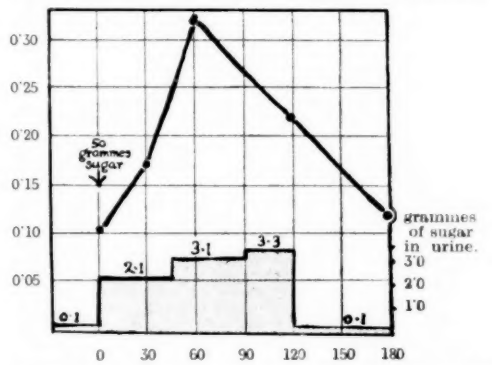


FIG. 4.—Showing the effect of 50 g. sugar on the level of the blood sugar and the sugar excreted per hour.

diabetic is unable to store the sugar readily, and that it circulates in the blood for a much longer period than usual. This effect may perhaps be ascribed to the absence of Cohnheim's substance in adequate amounts. (Fig. 4.) The fact that the respiratory quotient in diabetes is low shows that the body is not burning sugar, and this may be ascribed to the absence of

Clark's substance in adequate amounts. The persistence of hyperglycæmia in severe diabetes, in spite of starvation, may perhaps be due to absence of Dakin's substance.

THE MECHANISM REGULATING THE AMOUNT OF SUGAR IN THE BLOOD.

The mechanism by which the amount of sugar in the blood is regulated must next be briefly considered. The sugar in the blood seems to remain at a fairly constant amount, except when it is raised after a meal or when it is decreased after the effect of the meal has passed off. The decrease is sometimes quite marked, but after one or more hours the level of the blood sugar returns to its original level or a little lower. The mechanism by which this is achieved is a complicated one, as there are four ductless glands—the suprarenal, the thyroid, the pituitary, and the pancreas—which exert an influence on it. The suprarenal, thyroid, and pituitary all seem to belong to one group, as an increase in their activity causes a rise in the blood sugar and perhaps glycosuria. A decrease in their activities may cause an increase in the sugar tolerance. The pancreas must be placed in the opposing group, as a decrease of its functions causes a diminution of the sugar tolerance.

The methods by which these glands produce their action are still difficult to understand, but considerable information has accumulated.

The mode of action of the suprarenal gland is especially interesting. The injection of adrenalin causes an increase in the blood sugar and may therefore cause glycosuria if the level of the blood sugar rises above the leak point. Further confirmation is obtained from observations on patients as anxiety may cause a temporary glycosuria—e.g., the strain of an examination (Cannon); the anxiety of either playing or looking on at a football match (McLeod[46]). Moreover, I have found the fasting value for the blood sugar raised to 0·16 or 0·18 g. per cent. on two occasions when I have tested the sugar and tolerance of patients with diabetes innocens. On repeating the test the fasting value has always been within the normal limits. If it be accepted that adrenalin plays a part in regulating the amount of sugar in the blood the method by which the necessary amount of adrenalin is settled is not known. The adrenalin is believed to act by converting the glycogen of the liver into sugar, as most sugar is excreted when the liver contains most glycogen. But if the liver contains little glycogen the adrenalin causes an increase in the amount of glycogen in the liver. The adrenalin is excreted in the general circulation and reaches the liver by the hepatic artery as well as by the portal vein, and it is possible that it also mobilises the sugar in the muscles and brings that to the liver.

The old work of Kulz[47] bears on this point. He made some observations on the time at which the liver of rabbits contained the maximum amount of sugar. He found that 4 hours after a dose of 21 g. of glucose the liver contained very little sugar, but that it began to accumulate in the liver after 10 hours, reached its maximum after 16 hours, and was nearly all gone after the 24th hour. The adrenalin may therefore be the active agent which helps to keep the sugar content of the blood constant, but the method by which the amount of adrenalin required is determined is not yet clear. The suprarenals are under the control of the splanchnic nerves, and stimulation of these nerves causes an increase in the output of adrenalin and a rise in the blood sugar. Further, it is through the splanchnic nerves that the impulses pass from the fourth ventricle. The excretion of sugar which Claude Bernard produced by puncturing the floor of the fourth ventricle can be abolished by cutting the splanchnic nerves or by removing the suprarenal glands. At this stage the question seemed relatively simple, but later it was found that after division of all the nerves of the hepatic plexus stimulation of the splanchnic nerves did not produce any hyperglycæmia.[48] Also stimulation of the hepatic plexus could produce hyperglycæmia by itself, but not if the suprarenals had been removed.

There are therefore two factors at work: (1) presence of adrenalin; (2) an intact hepatic plexus. It seems possible that the need for the sugar reacts in some way on a centre in the brain and that the impulses pass to the suprarenals via the splanchnic nerves, and this produces more adrenalin and hence more sugar in the blood.

The evidence for the influence of the thyroid is less complete. In exophthalmic goitre the sugar tolerance may be much reduced and sugar may be excreted. The opposite is the case in myxœdema, as the sugar tolerance is much increased. Treatment with thyroid extract lowers the sugar tolerance and may cause glycosuria even in healthy people if a large enough dose be taken.

The pituitary is still less understood. Glycosuria may occur in the early stages of acromegaly, but whether this is due to a secretion from the anterior lobe or is due to pressure on the floor of the fourth ventricle is not clear. After destruction of the posterior lobe, on the other hand, the carbohydrate tolerance is much increased. Feeding with posterior lobe will reduce the sugar tolerance.

How the work of regulating the blood sugar is shared between the three glands is at present quite unknown. The pancreas is the only gland in the opposing group as far as we know. The effects of an excess of pancreatic excretion are unknown. The defects of the pancreas are, however, well known. Since the day of von Mering and Minkowski a great deal of work has been done on the effects of removal of the pancreas, notably by Starling and Allen. Allen has shown that if one-eighth to one-ninth of the whole gland is left intact the diabetes will be of a mild type, but if less than one-ninth is left the disease is of a severe type. These observations show that the pancreas supplies a secretion which is essential for the metabolism of sugar. I have already described the evidence of its mode of action.

This completes my review of the physiological aspects of diabetes mellitus. The whole subject of diabetes bristles with difficulties, as I have tried to show throughout this lecture. The more we advance our knowledge the more complicated the problem becomes, and the more there is to learn.

References.

1. Pavy: Physiology of Carbohydrates, 1894, 101. 2. Pavy: Ibid., 187. 3. Benedict and Osterberg: Jour. Biol. Chem., 1918, xxxiv., 195, 217. 4. Michaelis and Rona: Biochem. Zeitsch., 1908, xiv., 476. 5. Abel, Rowntree, and Turner: Jour. Pharmacol. and Exper. Therap., 1914, v., 275. 6. Michaelis and Rona: Biochem. Zeitsch., 1908, xvi., 60; 1909, xviii., 514. 7. Lyttgens and Sandgren: Ibid., 1911, xxxi., 153. 8. Bang: Ibid., 1912, xxxviii., 166. 9. Falta and Richter-Quittner: Ibid., 1919, c. 148. 10. Brinkman and V. Davis: Arch. Internat. de Physiol., 1919, xv., 105. 11. Brinkman and V. Davis: Biochem. Zeitschr., 1920, cv., 93. 12. Eppstein: Studies on Hyperglycæmia in Relation to Glycosuria, Mount Sinai Hospital, New York, 1916, 1. 13. Dreyer, Bazett, and Pierce: THE LANCET, 1920, ii., 588; ibid., ii., 1920, 558. 14. Hamburger and Brinkman: Biochem. Zeitsch, 1918, xcvii., 88; Brit. Med. Jour., 1919, i., 267. 15. Pavy: Physiol. of Carbohydrates, 1894, 227. 16. Baudouin: Cit. Frank. 17. Frank: Zeits. f. Physiol. Chemie, 1911, lxx., 291. 18. Reicher and Stern: Kongress f. Inn. Med., Wiesbaden, 1910. 19. A. Th. B. Jacobsen: Biochem. Zeitschr., 1913, lvi., 471. 20. Graham: Jour. Physiol., 1916, l., 285. 21. Bang: Biochem. Zeitsch, 1913, lvii., 300. 22. Keith, Rowntree, and Geraghty: Arch. Int. Med., 1915, xvi., 547. 23. Johanson: Skand. Arch. f. Physiol., 1909, xxi., 1. 24. Schönndorf: Pfluger's Arch., 1903, xcix., 191. 25. de Fillipi: Zeit. f. Biol., 1907, xlix., 511; 1908, lii., 38. 26. Jacobsen: Amer. Jour. Physiol., 1920, lii., 233. 27. Strauss: Deutsch. Med. Woch., 1901, 757, 786. 28. Bergmark: Jahr. f. Kinderheilkund, 1914, lxxx., 373. 29. McLean and de Wessolow: Quart. Jour. Med., 1921, xiv., 103. 30. Woodyat, Sansun, and Wilder: Jour. Amer. Med. Assoc., 1915, lxv., 2067. 31. Pavy: Ibid., 158. 32. Cammidge: THE LANCET, 1920, ii., 393. 33. Bang: Der Blutzucker, Wiesbaden, 1913, 53. 34. Kleiner: Jour. Exper. Med., 1916, xxiii., 507. 35. Cohnheim: Zeit. f. Physiol. Chemie, 1904, xlii., 401; 1906, xlvii., 253. 35. Claus and Emden: Beit. z. Chem., Physiol., and Path., 1905, vi., 214. 37. De Witt: Jour. Exper. Med., 1906, viii., 195. 38. Hall: Amer. Jour. Physiol., 1007, xviii., 283. 39. Levene and Meyer: Jour. Biol. Chem., 1911 ix., 97. 40. Cruikshank and Paterson: Jour. Physiol., 1913, xlvii., 381. 41. Starling and Lovatt Evans: Ibid., 1914, xlix., 67. 42. Clark: Jour. Exper. Med., 1916, xxiv., 621. 43. Hedon: Arch. Internat. de Physiol., 1913, xiii., 4, 255. 44. Cammidge: THE LANCET, 1920, ii., 393. 45. Dakin and Dudley: Jour. Biol. Chem., 1913, xiv., 155, xv., 463, xvi., 505. 46. McLeod: Physiology and Biochemistry in Modern Med., 3rd ed., 706. 47. Kulz: Arch. f. d. ges. Physiol., 1881, xxiv., i. 48. McLeod: Amer. Jour. Physiol., 1912, xxix., 419.

A SIMPLE

QUANTITATIVE SERUM-REACTION FOR THE DIAGNOSIS OF SYPHILIS

AND THE EXPRESSION OF RESULTS IN STANDARD UNITS.[1]

BY GEORGES DREYER AND HUGH KINGSLEY WARD.

(From the Department of Pathology, University of Oxford.)

QUALITATIVE AND QUANTITATIVE TESTS.

EVER since the application of the Bordet and Gengou phenomenon of complement fixation to the diagnosis of syphilis by Wassermann, Neisser, and Bruck in 1906, this reaction, generally known as the Wassermann reaction, has been our most valuable aid in the diagnosis of syphilis. During these years the technique has undergone a series of modifications with the object of enhancing the specificity and the delicacy of the reaction. The result has been that in the Wassermann reaction we now possess a practical and reliable qualitative test for the diagnosis of syphilis. If the reaction fulfils the conditions laid down by Wassermann (total absence of hæmolysis), it is for all practical purposes specific, save, perhaps, in the acute stages of malaria, in pellagra, and in yaws. On the other hand, an incomplete or negative reaction by no means excludes syphilitic infection.

The disadvantages of the method are briefly as follows:—

1. The rather complicated technique, with its many pitfalls, requires very considerable skill and experience in the handling of the various more or less unstable reagents. That this does not interfere, for all practical purposes, with the qualitative value of the test in the hands of highly skilled and experienced pathologists is clearly brought out by the experiments of McIntosh, Harrison, and Browning,[2] who tested 104 serums independently and arrived at nearly identical results.

2. The reaction cannot be properly standardised owing to the number of variants in it—complement and red cells varying from day to day, amboceptor and antigen varying from month to month. For this reason any attempt to determine from one time to another the titre of the serum in any given case is bound to be only approximately accurate. That this is so was clearly proved by the careful quantitative determinations of Thomsen,[3] who compared the same serums, kept under ideal conditions, at intervals of a few days. These serums did not give the same results on three different occasions.

3. Because titration is only approximately accurate and also involves very considerable labour the routine usually adopted is to use one fixed quantity of serum (0·1 c.cm) for the test, and to express the results in terms of +, ++, +++, and ++++, with a view of indicating the strength of the so-called Wassermann substance. The result of this procedure is that the reaction remains ++++ until near the borderline. Thus if the serum is strong the Wassermann reaction gives no indication of how the case is progressing unless and until the reaction approaches the borderline, where it may disappear altogether, or perhaps fluctuate between positive and negative, according to the delicacy of the reaction on the particular occasion. If the serum is weak the reaction may become negative and remain negative, or again, as before, fluctuate between positive and negative over a prolonged period.

It may be said that these fluctuations, frequently observed, are due to actual changes in the strength of the serum, but as similar fluctuations also occur when the same serum is tested on different occasions, it is, in our opinion, probable that these fluctuations are largely due to variations in the sensitiveness of the Wassermann reaction—and are not true changes in the strength of the serum. The procedure adopted by some workers of using two different amounts of complement with the fixed amount of syphilitic serum gives little or no help in this respect.

For the reasons here given the physician may receive very little guidance from the Wassermann reaction as to the result of treatment, and will often find it difficult to correlate his clinical observations with the result of the reaction.

Attempts to Dispense with the Hæmolytic System.

Owing to the complicated technique of the Wassermann reaction attempts have been made from time to time to devise a simpler reaction by doing away with the hæmolytic system. The first test of this type was the Hermann and Perutz flocculation reaction. In this the property of syphilitic serum to flocculate a suspension in saline of sodium glycocholate and cholesterin was made use of. Most observers seemed to agree that it was less delicate than the Wassermann reaction, and also gave a considerable number of false positive results. Of subsequent flocculation reactions the Sachs-Georgi is the one that has yielded diagnostic results that compare most favourably with those given by the Wassermann reaction. As a test fluid Sachs and Georgi made use of a saline suspension of a mixture of alcoholic heart extract and cholesterin. To 0·5 c.cm. of this test-fluid they added 1·0 c.cm. of serum diluted 1/10, incubated for two hours at 37° C., left the tubes at room temperature for another 20 hours, and read the results. Most observers in Germany seem to agree that this reaction gives almost as reliable results as the Wassermann reaction as carried out in Germany. On the other hand, opinions so far expressed in this country seem less favourable.

We have for years tried to standardise the Wassermann reaction and to devise a unit system for expressing its results, but in vain. An analysis of the results obtained by the flocculation test of Sachs and Georgi indicated the possibility of evolving a simple quantitative test that could be standardised. With this in view it was obvious that the use of an unstable heart extract such as that of Sachs and Georgi would defeat our aims, but fortunately Bordet and Ruelens[4] have recently shown that it is possible to prepare (for the Wassermann reaction) a heart-extract antigen that is stable and at the same time very sensitive.

To us the ideals to be aimed at in a diagnostic reaction of this kind are: (1) that the technique should be simple and accurate; (2) that it should be possible to reproduce the same experimental conditions from time to time, and that there should only be one variant—i.e., the substance to be estimated; (3) that it should be possible to determine the amount of this substance and express it in standard units per c.cm., no matter whether absolute quantities or relative proportions are made use of in the test; (4) that the standard unit should be easy to maintain and check.

TECHNIQUE.

The technique which we have evolved with these requirements in view will now be described in detail.

A. Reagents and Apparatus Required.

Outline.—(1) Two standardised saline suspensions of different concentrations made from a mixture of alcoholic heart extract and cholesterin; (2) serum to be tested; (3) normal saline solution for making the suspension and diluting the serum; (4) agglutination tubes, dwarf test-tubes, and stands; (5) graduated pipettes, measuring cylinder, and dropping pipette; (6) an apparatus for delivering drops of saline at a constant rate; (7) two water-baths; (8) an artificial light arrangement for reading the tubes against a dark background; (9) a six-magnification hand lens.

Detail.—1. The following solutions are necessary for making the two heart-cholesterin saline suspensions:—

(*a*) The alcoholic heart extract is prepared according to the method of Bordet and Ruelens[4]: 100·0 g. calf's heart muscle, freed from fat, is cut up finely, mixed with 125·0 c.cm. ordinary alcohol (94–96 per cent.) and left at room temperature in a glass-stoppered bottle for five days, shaking occasionally. The alcohol is then filtered off. The residue is dried in the incubator at 37° C. for 24 hours, 200·0 c.cm. of pure acetone is added, and the mixture kept in a glass-stoppered bottle in an incubator at 20° C. for seven days.

[1] Report to the Medical Research Council.

[2] Medical Research Council, Special Report Series No. 21, "The Diagnostic Value of the Wassermann Test."

[3] Thomsen Oluf: Die quantitative Ausführung der Wassermannchen Reaktion, Zeitschrift f. Immun. und Exper. Therap., 1910, Bd. 7.

[4] J. Bordet et G. Ruelens: "L'Antigène Syphilitique de l'Institut Pasteur, Bruxelles," Comptes Rendus de la Société de Biologie, T. lxxxii., Feb. 2nd, 1919.

The acetone is then filtered off, and the residue is again treated in a similar manner with 100·0 c.cm. acetone at 20° C. for one day. The acetone is again filtered off, the residue is dried in the incubator at 20° C. for two hours, and 200·0 c.cm. ordinary alcohol (94–96 per cent.) added. This mixture is put in a glass-stoppered bottle in the incubator at 20° C. for 10 days, and then filtered through filter paper. The filtrate thus prepared, limpid and golden yellow in colour, is now ready for use. It contains the acetone-insoluble alcohol-soluble substances of the heart muscle. Kept in the dark at ordinary room temperature in a tightly stoppered glass bottle, it will remain limpid and keep unchanged for a very long period.

(*b*) The alcoholic solution of cholesterin is prepared by dissolving 1·0 g. of pure cholesterin (preferably Kahlbaum's) in 100·0 c.cm. absolute alcohol. It should be kept under the same conditions as the heart extract.

(*c*) The sterile normal saline solution is prepared by dissolving 9·0 g. of pure sodium chloride in a litre of freshly distilled water and immediately sterilising in the autoclave.

The two heart cholesterin saline suspensions are prepared from these solutions (*a*, *b*, *c*) in the following manner:—

Measure 5·0 c.cm. of the heart extract (*a*) and 0·25 c.cm. of the cholesterin solution (*b*) into a clean dry tube and mix. Measure out 1·0 c.cm. of this mixture into a clean dry 100·0 c.cm. measuring cylinder, taking care that the point of the pipette is placed on the bottom of the cylinder before letting the fluid run out. Sterile normal saline (*c*) is now allowed to drop at a constant rate from a constant height directly on to the fluid at the bottom of the measuring cylinder without touching the sides of the cylinder as it drops. The saline should drop at a rate which will deliver 34·0 c.cm. in 4 min. 30 sec. The saline should drop a distance of 36·0 cm. on to the fluid.

Two suspensions of different concentrations are prepared:—

α suspension—1·0 c.cm. of the heart cholesterin mixture, into which 10·7 c.cm. of saline are dropped.

β suspension—1·0 c.cm. of the heart cholesterin mixture, into which 34·0 c.cm. of saline are dropped.

The resulting suspensions are mixed by gently inverting the cylinder. They should *not* be shaken.

α suspension is naturally more opaque than β suspension. The easiest way to measure the saline is to allow the saline to drop into the cylinder for 1 min. 25 sec. in the case of α suspension and for 4 min. 30 sec. in the case of β suspension (at the rate indicated above).

A convenient and readily made dropping apparatus for delivering the saline at this rate is described below.

Unfortunately, all attempts to make permanent standard saline suspensions that will keep indefinitely have so far met with no success, and therefore the suspensions must be freshly prepared immediately before use. Such suspensions, if made exactly according to the above directions, with the same heart extract and cholesterin, are identical from day to day in opacity, size of suspended particles, and sensitiveness, and thus permit of standardisation.

2. To obtain serums that will give reliable results it is essential that the blood should be withdrawn with due aseptic precautions and the serum kept free from infection. To carry out a full test 4–5 c.cm. of blood should be drawn. For routine purposes we have found that the most satisfactory technique to secure sterility and an ample supply of serum is as follows:—

To place the blood directly into a 6 c.cm. centrifuge tube lined with sterile saline agar (as described by A. D. Gardner [5]) and closed with a sterile indiarubber stopper. The serum is transferred by a sterile Pasteur pipette into a dry, sterile, dwarf tube plugged with cotton-wool. If the clot does not contract satisfactorily—a rare occurrence—the tube should be centrifugalised. If the syringe or needle for withdrawing the blood is kept in alcohol, the alcohol should be removed with ether and the syringe or needle dried before use, as we have found that alcohol particularly, and also ether to a less extent, is highly detrimental to this reaction, and even more so to the Wassermann reaction. The presence of even a marked amount of dissolved haemoglobin in the serum does not interfere with the reaction so long as the serum is fairly clear. A moderate degree of turbidity of the serum, if it is not caused by infection, does not interfere with the reaction. Before testing, the serum must be heated to 53°–54° C. for 90 minutes in a water-bath.

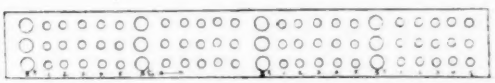
3. The sterile saline solution for dilution of serums is made up in the manner already described above.

4. The agglutination tubes [6] employed are identical with those used for the agglutination of standard cultures. The inside diameter of these tubes is 5·5–6·2 mm., the outside diameter is 6·6–7·3 mm., the length is 5·8 mm., the lower end is conical, and the upper end flanged to facilitate filling.

Dwarf test tubes measuring 7 cm. × 1 cm. should be used; all tubes should be cleaned in acid and thoroughly rinsed with distilled water to remove all traces of acid. The tubes are allowed to drain and are then dry sterilised without plugging.

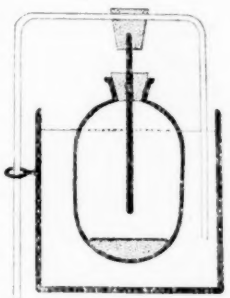
Agglutination stands. Where only a small number of serums are to be tested the agglutination stands used in the standard agglutination technique can be employed. If larger number of serums are tested it is more convenient to use a stand with three rows of holes, each row holding four holes for dwarf test tubes and 20 holes for agglutination tubes, as shown in Fig. 1.[7]

FIG. 1.



5. Two pipettes are required, a 5·0 c.cm. pipette graduated in tenths of a c.cm., and a 1·0 c.cm. pipette graduated in hundreths of a c.cm., together with a 100·0 c.cm. measuring cylinder graduated in c.cm., a dropping pipette as used in the standard agglutination technique (total length 19 cm., length of capillary portion 2·8 cm., outside diameter of the body of pipette 5·0–5·4 mm., outside diameter of capillary portion 2·36–2·41 mm., bore 0·5 mm.).

FIG. 2.



6. The simple apparatus for delivering drops of saline at a constant rate, which is here illustrated (Fig. 2), was devised for this purpose by Mr. H. F. Pierce, a co-worker in the laboratory.

The principle of the apparatus is a floating syphon. The syphon is carried on a glass bulb, counterweighted with mercury, and floating in a cylindrical glass vessel containing the saline solution. The height of the syphon above the floating bulb is adjustable by means of a glass rod in order to be able to vary the head of fluid, and therefore the rate of dropping. The chief dimensions of the apparatus are as follows:—

Cylindrical glass vessel: height 12 cm., diameter 9 cm.

Glass float: height 10 cm., diameter 6·5 cm.

Glass syphon tube: outside diameter 6 mm., drawn out at the delivery end into a short capillary; outside diameter 2 mm.

The saline solution is poured into the cylindrical vessel, the syphon placed in position, and the flow started by suction. The height of the syphon tube determines the head of fluid and therefore the rate of delivery. Once fixed it will deliver the saline solution at a constant rate, provided the float is never allowed to touch the bottom of the cylindrical vessel. The delivery end of the syphon is held in position by a loop of wire, through which it glides as the level of the fluid falls. The apparatus, being all glass, is easy to clean.

7. Two properly regulated water-baths, one to be kept at 37° C., the other between 53° and 54° C.

[5] Gardner, A. D.: A Device for Insuring Spontaneous Separation of Blood-clot from the Walls of the Containing Vessel, THE LANCET, 1917, ii., 51.

[6] Agglutination tubes and dropping pipettes can be obtained from Messrs. Baird and Tatlock, Hatton Garden, London, E.C., or from Messrs. R. B. Turner and Co., Eagle-street, Southampton-row, London, W.C.

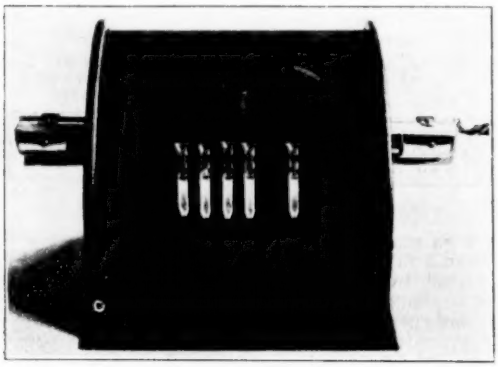
[7] These stands can be obtained from The Oxford Scientific Instrument Co., Wheatsheaf-yard, High-street, Oxford.

8. An artificial light arrangement for reading the tubes is essential.

The artificial light should be used in a darkened room. The simplest arrangement is an adjustable table-lamp fitted with an ordinary plain conical shade, covered on the outside with dull black paper. The end of the electric bulb should not project appreciably beyond the edge of the shade. For use the lamp should be tilted to such a degree that the observer does not look into the light. The tubes to be read are held against the edge of the shade, the lower end tilted towards the observer, and the meniscus of the fluid in the tube should be slightly above the edge of the shade. It is desirable to place a dull-black cardboard on the table and another resting against the further edge of the lamp-shade. A frosted bulb of 30 c.p. is used.

Where the observer has had no previous experience, and it is desirable to compare the different degrees of flocculation in the tubes to be read, an apparatus[8] for illuminating a number of tubes held in a fixed position is convenient. (Fig. 3.) It consists of a small box with a sloping front, lined

FIG. 3.



inside with black velvet, and containing a long frosted electric window-light. The latter illuminates a slit in the front of the box and the tubes are placed in front of the slit. The tubes are placed in such a manner that the meniscus of the fluid is slightly above the upper edge of the slit. Again, the observer should be so placed that he cannot look into the light, which is placed just behind the upper edge of the slit.

9. A 6-magnification hand lens, which should be of reputable make and give a good depth of focus.

B. *Method of Setting Up the Test.*

Place nine of the agglutination tubes in the stand together with one dilution tube—i.e., a dwarf test tube.

TABLE I.

No. of tube.	Drops of saline solution.	Drops of serum 1/x.	Drops of suspension.	Total dilution in which serum acts.
1	0	20 1/1	6 (α suspension)	1/1·25
2	0	10 ,,	15 (β suspension)	1/2·5
3	5	5 ,,	15 ,,	1/5·2
4	8	2 ,,	15 ,,	1/13·1
5	9	1 ,,	15 ,,	1/26·4
6	0	10 1/20	15 ,,	1/46
7	5	5 ,,	15 ,,	1/92
8	8	2 ,,	15 ,,	1/232
9	9	1 ,,	15 ,,	1/462

It is convenient also to place the dwarf test tube containing the serum in the hole arranged for it in the stand. With the proper dropping pipette *held vertically* measure out into the nine agglutination tubes the following number of drops of saline solution, serum, and standard suspensions. (Table I.) The total dilutions given in the table are calculated by taking into account the relative volumes of the drops in the case of serum, saline, and suspension. To make up the 1/20 dilution of serum add 19 drops of saline solution to the dilution tube (when adding the saline solution to the agglutination tubes) and one drop of pure serum to the dilution tube (when adding the pure serum to the agglutination tubes). Thus a 1/20 serum dilution is obtained.

A control tube containing 20 drops of saline solution and 6 drops of α suspension, and another containing 10 drops of saline solution and 15 drops of β suspension, should always be made up and placed in the stand. It is important to note that one and the same pipette must be used throughout the whole operation.

At each stage of the procedure the pipette should be carefully washed out with distilled water and either dried out with successive quantities of acetone or dried out with successive quantities of absolute alcohol followed by successive quantities of ether. The use of an ordinary suction pump will greatly accelerate the washing and drying of the pipette. When the reagents have been added to the tubes, shake each tube thoroughly in order from right to left—i.e., beginning with the tube containing the highest serum dilution, place the stand in a water-bath at 37° C. (not in dry air) and leave it for seven hours. It is very important to arrange the level of the water in the bath so that not more than the lower half to two-thirds of the column of fluid in the tubes are immersed. Flocculation is greatly accelerated by this arrangement, and sharper readings are obtained. In the case of unknown serums, or of syphilitic serums previously found to give a weak reaction, and in the case of cerebro spinal fluids it is sufficient to put up the first five tubes. If the limit of flocculation is not reached within the five tubes, the 1/20 dilution must be carried out. With very rare exceptions the flocculation will stop within this range of tubes. If not, a further dilution of 1/400 should be made.

Should a more precise determination of the limits of flocculation be required it can be obtained by using a stand of 12 tubes with a series of quantities given in the table contained in the Directions for Preparation and Standardisation of Agglutinable Cultures.[9] The tubes are examined after the seven hours' incubation in the water-bath at 37° C., followed by 5–10 minutes' standing at room temperature. The inconvenience caused by a seven-hour incubation can be overcome by adding the serum and saline solution to the tubes, leaving them overnight in the ice-box, adding the freshly made-up standard suspension in the morning, and incubating for seven hours.

C. *Reading of Results.*

The tubes are read in the manner already indicated under heading A. 8. The principal terms employed in describing the different degrees of flocculation met with are: total (t), standard (S), trace (tr), and nil (0).

Total flocculation (t) indicates a condition where the fluid in the tube has become nearly clear, with the bulk of the large flocculi settled down at the foot of the tube. This degree of flocculation is rarely seen.

Standard flocculation (S) is the degree of flocculation that can readily be seen with the naked eye. The fine flocculi are evenly distributed, of uniform size, and definitely separated from one another. The fluid accordingly shows some degree of clarification.

Trace (tr) is the term applied to a very fine flocculation, not visible with certainty to the naked eye by most persons, while readily visible with the 6-magnification lens.

Nil (0) indicates that no flocculation is recognisable by means of the 6-magnification lens, and should therefore be identical with the control tube.

Naturally, there are degrees of flocculation which fall in between total, standard, trace, and nil. For these the following terms are used: *Total minus* (t−), where there is marked clarification of the fluid; the flocculi are large, well separated, and some have settled down at the foot of the tubes. This degree of flocculation is as common as total flocculation is rare. On each side of standard flocculation we find *standard plus* (S+) and *standard minus* (S−). In the former the flocculi are larger than those seen in standard flocculation; they are uniformly distributed, and clarification is more marked: in the latter is seen a finer flocculation than standard and a correspondingly less marked clarification. Similarly, we recognise a *trace plus* (tr +) and a *trace minus* (tr −), the former representing something more than

[8] The apparatus can be obtained from the Oxford Scientific Instrument Co., Wheatsheaf Yard, High-street, Oxford.

[9] Issued on behalf of the Medical Research Council by the Standards Laboratory, Department of Pathology, University of Oxford.

trace but less than standard minus (s −), being on the limit of naked-eye visibility for most persons, while, of course, easily detected with the 6-magnification lens. The latter, trace minus (tr −), is a very fine degree of flocculation that can only be detected by means of the 6-magnification lens. Finally, on occasions it may be difficult, even by means of the 6-magnification lens, to decide with certainty whether flocculation is definitely absent, the term *query trace* (tr ?) is then applied. Any tube showing less than trace should for safety be compared with the control tube showing no flocculation.

To secure uniformity in readings by various observers tubes exhibiting two degrees of flocculation—viz., standard and trace—and a control tube without flocculation have been prepared and made permanent by means of formalised gelatin. A permanent tube exhibiting total or total minus flocculation is not necessary, as this reading is obvious from the description.

D. *Expression of Results in Standard Units.*

All readings should be expressed in terms of standard flocculation units. The number of standard flocculation units in a serum is arrived at in the following manner:—

The amount of serum which, when made up to 1·0 c.cm. volume with normal saline solution, causes standard flocculation on being mixed with 1·5 c.cm. of a particular *S* suspension and maintained at 37° C. at seven hours, is assumed to contain four (4) units.[10] On this basis the strength of a serum—whether measured by absolute quantities or relative quantities as indicated here—can be expressed in terms of standard units per c.cm. All that is required is to multiply the dilution in which standard flocculation occurs by a factor representing the sensitiveness of the particular suspension used. This factor will hereafter be called the "suspension factor."

Example.—If a serum acting in a total dilution of 1/46 (tube 6) causes standard flocculation, then 46 (total dilution) × 1·6 (suspension factor) = 73·6 units. Therefore this particular serum contains 73·6 units per c.cm. For these standard units we propose to adopt the term Σ *units* (Sigma units), and shall refer to them in future as such.

As heart extracts prepared at different times and places may vary, it is essential to compare the relative sensitiveness of their suspensions with the original one, as otherwise a uniform standard for different workers could not be maintained. It is obvious that the more sensitive a particular suspension is the smaller will its suspension factor become, and vice versa. When such a comparison is carried out a long series of tubes, with a very gradual increase of dilution, should be used, as in the case of the standardisation of agglutinable cultures. Owing to the great increase in dilution of the syphilitic serum in successive tubes, it will commonly happen that no tube in the series exhibits standard flocculation. Nevertheless, results of sufficient accuracy for ordinary purposes can be calculated by means of an interpolation table (Table II.) constructed for this purpose.

TABLE II.

t−	2·00	s−	0·86	tr−	0·50
s+	1·35	tr+	0·68	tr?	0·37
S	1·00	tr	0·58	0	0·25

The readings from s + to tr are in general the readings giving the most accurate results. The table is used as follows:—

Supposing no tube in the series shows S flocculation, and tube 6 shows s + flocculation and tube 7 tr + flocculation, then the number of units in tube 6 = 46 (total dilution) × 1·35 (interpolation figure) × 1·6 (suspension factor) = 99·4 Σ units, and the number of units in tube 7 = 92 (total dilution) × 0·68 (interpolation figure) × 1·6 (suspension factor) = 100 Σ units. The average is 99·75 Σ units, or 1·0 c.cm. of the serum contains practically 100 Σ units.

On the other hand, one may find quite considerable discrepancies between two readings, as in the following case, where tube 3 gives s − and tube 4 tr − flocculation. The number of units in tube 3 = 5·2 (total dilution) × 0·86 (interpolation figure) × 1·6 (suspension factor) = 7·2 Σ units, while the number of units in tube 4 = 13·1 (total dilution) × 0·5 (interpolation figure) × 1·6 (suspension factor) = 10·4 Σ units. The average is 8·8 Σ units, or 1·0 c.cm. of the serum contains approximately 9 Σ units.

[10] It is to avoid the expression of positive results in fractions of a single unit that four units are taken instead of one unit as the basis of this unit system.

The subsequent table, Table III. (total dilution − interpolation figure), is computed with the aim of minimising the labour in calculating the unit-content per c.cm. It must be clearly understood that the figure given in this table must always be multiplied by the suspension factor for the given heart extract to arrive at the number of standard units.

TABLE III.

Degree of flocculation	Number of tube.								
	1	2	3	4	5	6	7	8	9
t−	2·5	5·0	10·4	26·2	52·8[9]	92·0	184·0	464·0	924·0
s+	1·7	3·4	7·0	17·7	35·7	62·0	124·0	313·0	623·0
S	1·25	2·5	5·2	13·1	26·4	46·0	92·0	232·0	462·0
s−	1·1	2·1	4·5	11·3	21·8	40·0	79·0	200·0	398·0
tr+	0·9	1·7	3·5	8·9	18·0	31·0	63·0	158·0	314·0
tr	0·75	1·4	3·0	7·6	15·3	27·0	53·0	135·0	268·0
tr−	0·6	1·2	2·6	6·5	13·2	23·0	46·0	116·0	231·0
tr?	0·4	0·9	1·9	4·8	9·8	17·0	34·0	86·0	171·0
0	—	0·6	1·3	3·3	6·6	12·0	23·0	58·0	115·0

In the calculation of the unit-content of a given serum it must be borne in mind that *inhibition zones* are a very frequent occurrence in this reaction. By inhibition zones we mean the phenomenon, exhibited by certain serums, of showing in high concentrations a distinctly weaker flocculation than when more dilute. This phenomenon is in no way peculiar to this reaction, but is frequently encountered in other serum reactions—viz., agglutination, bacteriolysis, hæmolysis. The inhibition zone frequently extends from tube 1 (total dilution 1/1·25) as far as tube 5 (total dilution 1/26·4), but not often further than that. It is on the whole most marked in cases of secondary syphilis, though occasionally present in other serums showing a high titre. In weak serums, fortunately, it is in general much less pronounced, thus not interfering with the diagnostic value of the reaction. The treatment of the serum before testing has a very marked influence on this phenomenon. An unheated serum or a serum heated to 53°–54° C. for a short time (5–10 minutes) will usually show a much more pronounced zone of inhibition than the same serum heated to 53°–54° C. for 60–90 minutes. In fact, if the serum is unheated or heated for only a short time the reaction may be almost entirely masked by the inhibition, while the same serum properly heated will give a sharp and clear reaction. For the above reasons it is essential to examine at least the first five tubes before pronouncing a serum negative.

In using Table III. for calculating the unit strength of a serum the inhibition zone should be entirely ignored and the unit calculated only from those tubes showing a definite fall in degree of flocculation with progressive dilution of the serum, as otherwise the strength of the serum would be underestimated. To illustrate this a serum recently tested gave the following readings: tube 1 (1/1·25), tr?; tube 2 (1/2·5), tr?; tube 3 (1/5·2). tr?; tube 4 (1/13·1), tr +; tube 5 (1/26·4), S; tube 6 (1/46), tr −; tube 7 (1/92), 0. This serum contains 40 Σ units per c.cm.

E. *Certain Precautions to be Observed.*

1. If a serum obviously infected gives a negative reaction the reaction may be accepted as valid, as in our experience we have never found a positive serum which has become infected give a negative reaction. On the other hand, all positive reactions in infected serums must be discarded and new specimens examined. For we have found that a positive serum may show twice the number of units as the result of infection, and occasionally a negative serum may give a positive reaction.

2. No preservatives, such as phenol, formalin, &c., should be added to any of the reagents, as experiments have shown that they either interfere with the reaction or cause false positive reactions.

3. All tubes must be scrupulously cleaned with distilled water after soaking in acid in order to free them

from all traces of the latter, as acid produces a flocculation in the serum-suspension mixture.

4. The temptation to increase the delicacy of the reaction by incubating for 18–24 hours must be resisted. This prolonged incubation encourages bacterial growth, which in many cases causes false flocculation. This prolonged incubation, as a matter of fact, does not make the reaction more delicate than incubation for seven hours in a water-bath, where the water-level is properly adjusted (see under heading B).

F. *Interpretation of Results.*

1. *Cases with no definite history of syphilis.*—Serums containing less than one unit are considered to give a negative reaction. Serums containing four or more units are considered to give a positive reaction. Serums containing from one to four units should not be definitely accepted as positive until the test is repeated and confirmed, owing to the fact that infection of the serum may have been overlooked at the time of setting up the test. False positive results are very rare, but the responsibility of declaring a non-syphilitic case to be positive is so great that we have adopted this precaution to minimise the danger of making such a mistake, without at the same time lowering the diagnostic value of a weak reaction. Further experience may lead to the raising or lowering of these limits.

2. *Cases with a definite history of syphilis.*—Serums containing less than one unit are considered to give a negative reaction. Serums containing more than one unit are considered to give a positive reaction.

3. *Cerebro-spinal fluids.*—These fluids, if containing less than one unit, are considered to give a negative reaction. Cerebro-spinal fluids containing more than one unit are considered to give a positive reaction. Infection in cerebro-spinal fluids is so rare, and so easily seen when present, that the danger of making a mistake does not exist.

In general we have found that untreated cases in the secondary stage, untreated tertiary cases with gummata, and untreated cases of congenital syphilis show a high unit-content in the serum—i.e., from 50 up to even a 1000 or more Σ units. While, on the other hand, untreated early primary cases, or treated late primary, secondary, and tertiary cases show a low unit-content in the serum, or are negative. Cerebro-spinal fluids show a comparatively low unit-content as compared with serums.

RESULTS.

By the method described above in detail we have examined 1077 serums and cerebro-spinal fluids from definite cases of syphilis, from cases of suspected syphilis, and from patients suffering from various other diseases, including a large number of cases of tuberculosis with tubercle bacilli present in the sputum, as well as a number of known healthy normal persons. The results are tabulated in Table IV. All the serums and cerebro-spinal fluids referred to have been tested by the Wassermann reaction either by ourselves or in the pathological departments of Sheffield University, Guy's Hospital, King's College Hospital, Brompton Hospital, and the Radcliffe Infirmary, Oxford, by means of one or other of the accepted methods described in the special report on the Wassermann reaction issued by the Medical Research Council.

As one of our aims has been to compare the results obtained by the reaction here described with those of the Wassermann reaction, the table has been arranged with this object. In order to secure as clean-cut a comparison as possible we have eliminated doubtful reactions in the Wassermann reaction by calling ++++, +++, ++ positive, and +, ±, and − negative. In our own reaction, which we propose to call the Σ reaction (Sigma reaction), we have drawn the line between positive and negative reactions as described under heading F. To secure unbiased results it is important, as in all tests of this kind, that the observer should be ignorant of the origin of the serum. Therefore all readings have been made by one of us, observing these conditions.

From Table IV. it is seen that out of the 1077 cases 63·6 per cent. gave a negative reaction by both methods; out of 386 cases with definite evidence of syphilis the Wassermann reaction gave a positive result in 327 cases, while the Σ reaction gave a positive result in 381 cases. Thus the Σ reaction gave positive results in 18 per cent. more cases than the Wassermann reaction in this series of tests. It only failed in 5 cases to reveal the presence of syphilis, while the Wassermann reaction failed in 59 cases. In 5 cases with no history

TABLE IV.

No. of cases.	History of Cases.	Wa. R.	Σ R
686	These include normal cases, cases suffering from other diseases, treated cases of syphilis which no longer give a positive reaction, and one case of very early primary syphilis.	−	−
322	These include cases where there was a definite history or clinical evidence of syphilis, and a few where the diagnosis was based on a ++++ Wassermann reaction.	+	+
59	Cases where there was a definite history or clinical evidence of syphilis.	−	+
5		+	−
4	Cases where there was no definite history or clinical evidence of syphilis.	+	−
1		−	+

or definite evidence of syphilis the Wassermann gave a ++ reaction in 4 cases, and the Σ reaction gave a reading of 2·4 Σ units in one case (negative Σ reaction on repetition). Among the cases examined were 58 cases of tuberculosis with tubercle bacilli present in the sputum. Of these 52 gave a negative Σ reaction and also a negative Wassermann reaction, while 6 gave a positive Σ reaction, and also a ++++ Wassermann reaction. Two cases of scarlet fever were negative by both methods. Eighty-two cerebro-spinal fluids were examined.

It has been our experience that in the case of cerebro-spinal fluids the Wassermann reaction is as delicate as the Σ reaction. This, no doubt, because more cerebro-spinal fluid than serum is employed in the Wassermann reaction. In the case of serum, however, the Wassermann reaction has proved less sensitive. This is readily explained by the fact that relatively larger quantities of serum can be used in the Σ reaction without danger of obtaining false positive reactions. Accordingly, a treated case of syphilis will sometimes continue to give a positive Σ reaction after the Wassermann reaction has become negative. But, of course, a negative Σ reaction does not necessarily indicate cure.

Up to the present moment we have not had many opportunities of following the Σ unit-content in the serum of cases under treatment, but the following table (Table V.) will illustrate some of these. These

TABLE V.

Case 1.		Case 2.*		Case 3.*		Case 4.	
Date.	Sigma unit.	Date.	Sigma unit.	Date.	Sigma unit.	Date.	Sigma unit.
8/12/20	5·4	1/2/21	117·0	23/12/20	9·4	4/12/20	269·0
16/12/20	4·3	12/2/21	48·0	28/12/20	3·8	7/12/20	242·0
23/12/20	3·2	19/2/21	40·0	19/1/21	4·0	21/1/21	61·0
31/12/20	2·2	4/3/21	24·0	23/1/21	3·0	21/2/21	19·2
8/1/21	2·9	With the exception of Case 1, these gave ++++ Wassermann reactions throughout.					
23/1/21	1·4						

* Cerebro-spinal fluid.

cases all show a gradual decrease in their Σ unit-content during treatment, corresponding with improvement clinically. It would, however, be premature to generalise from only a few cases as to a definite correlation between clinical improvement and fall in Σ units. Only observations on a great number of cases can settle this point.

Where in the same case the result of the Wassermann reaction has fluctuated between positive and negative, such fluctuations have so far not been observed in the case of the Σ reaction.

REMARKS ON THE FLOCCULATION REACTION OF SACHS AND GEORGI AND SUBSEQUENT WORKERS.

In our opinion the reasons why the Sachs-Georgi reaction, with its subsequent modifications, has not come into general favour in this and other countries are :—

1. The fixed quantity of serum—viz., 0·1 c.cm. acting in a total dilution of 1 15—does not give the maximum number of positive reactions, because the quantity of serum used is insufficient. If the quantity of serum is increased to overcome this disadvantage a certain number of strong serums will give a negative reaction, owing to the inhibition zone phenomenon. Obviously the logical method of improving the technique should have been to set up a series of tubes with falling quantities of serum and constant quantities of suspension, though this procedure seems not to have been adopted.

2. In order to enhance the delicacy of the reaction Sachs and other workers increased the time of incubation from 2 hours at 37° C. to 18–24 hours at 37° C. This modification certainly increased the delicacy of the reaction, but unfortunately gave a certain number of false positive reactions. These were, in our opinion, almost certainly due to bacterial growth encouraged by prolonged incubation, and leading to false flocculation.

3. The technique does not lend itself to standardisation because (*a*) the heart extract is unstable, and (*b*) the method of making the suspension from the heart extract is not automatic, and so the suspension will vary, as regards opacity and size of suspended particles, with different workers.

SOME THEORETICAL ASPECTS OF THE Σ REACTION.

Having found that the Wassermann reaction and the Σ reaction gave, in most cases, closely identical diagnostic results, it became of interest to try to ascertain whether the active substance in both was the same or different. It is well known that a syphilitic serum before heating usually gives a much stronger Wassermann reaction than the same serum after heating to 56° C., and that the longer the serum is heated the less active it becomes. It was therefore important to ascertain whether heating produced the same weakening of syphilitic serum when tested by the Σ reaction. A strong syphilitic serum unheated, and heated at 54° C. for 5 min., 10 min., 20 min., 30 min., 60 min., 120 min., 240 min., was tested quantitatively by both reactions. In the Wassermann reaction the active substance apparently lost half its strength when heated for 30 min., and three-quarters of its strength when heated for 240 min., whereas heating produced no change in the strength of the active substance as measured by the Σ reaction save in the higher concentrations, where the inhibition zone was definitely diminished by the more prolonged heating.

The following seems to us a simple interpretation of the connexion between these divergent results :—

1. That in the case of the Wassermann reaction two substances act simultaneously, the one a thermostable substance ("x" substance) present only in syphilitic serums and the other a thermolabile substance ("y" substance) present in normal serums to a greater or lesser degree.

2. That also in the case of the Σ reaction these two substances take part in the reaction, the "x" substance causing the flocculation and the "y" substance causing the inhibition zone in the higher concentrations, but not influencing the end-titre of the serum.

3. That as the Wassermann reaction is in reality a negative reaction (i.e., prevention or reduction of hæmolysis) it is natural that an inhibitory substance in the serum should enhance the reaction by aiding in the inhibition of hæmolysis. It is then easy to see why, when a syphilitic serum is heated and the thermolabile inhibitory "y" substance is weakened, the Wassermann reaction is reduced in strength, while the Σ reaction, being a positive reaction and depending on the thermostable "x" substance alone, is not reduced in strength by heating. This explanation is also in agreement with the observation that the serums from persons suffering from certain diseases other than syphilis may give a positive Wassermann reaction when unheated ("y" substance present), but a negative reaction after heating ("y" substance reduced or destroyed).

A further support to this view was obtained by the examination of four serums supplied by Dr. W. d'Este Emery. We tested these serums, and found them all to contain 6·4 Σ units. Subsequently we learned from Dr. Emery that he had divided one serum into four parts, and heated the first part at 55° C. for 10 min., the second for 20 min., the third for 30 min., and the fourth for 40 min. He had then tested them quantitatively by the Wassermann reaction, and found their respective strengths to be 14·6, 8·1, 8, and 4·2 of his units.[11]

In testing a large number of syphilitic serums we have found a certain number of cases where the Wassermann reaction was strongly positive, while the Σ reaction gave comparatively few units, and on the other hand, cases where the Wassermann reaction was only weakly positive or negative, and the Σ reaction gave a comparatively large number of units. This discrepancy in results is, in our opinion, due to the varying amount of "y" substance in different syphilitic serums. A still further support of this contention is that most of the serums that give a positive Σ reaction and a negative Wassermann reaction show no inhibition zone in the Σ reaction.

Conclusions.

1. The reaction for the diagnosis of syphilis described here has yielded in our hands diagnostic results that compare more than favourably with the Wassermann reaction as carried out in this country.

2. The results obtained are quantitative as well as qualitative.

3. The reaction can be standardised, and the results can therefore be expressed in standard units, thus allowing direct comparison of the results obtained by various workers.

4. It is, therefore, possible to follow accurately the changes in the anit-content of the serum in a case of syphilis under treatment, and in this way to ascertain whether clinical improvement is regularly accompanied by a fall and an exacerbation by a rise in the unit-content of the serum.

5. This important point once settled, it will be possible to compare accurately the relative merits of different methods of treatment.

Our best thanks are due to Professor J. S. C. Douglas, Sheffield University; to Dr. E. F. Skinner, Royal Hospital, Sheffield; to Mr. D. Green, Royal Infirmary, Sheffield; to Mr. W. W. King, Jessop Hospital for Women, Sheffield; to Dr. C. P. Symonds and Dr. R. Hearn, Guy's Hospital; to Dr. W. d'Este Emery, King's College Hospital; to Dr. A. C. Inman, Brompton Hospital; to Dr. T. E. Osmond and Dr. H. K. Hamilton, St. Thomas's Hospital; and to Dr. A. G. Gibson, Radcliffe Infirmary, Oxford, all of whom have helped us with material, clinical and pathological reports. Our special thanks are due to Miss Jörgensen, Dr. F. G. Hobson, and to Dr. P. H. Jones, all of the Department of Pathology, University of Oxford, for the great assistance they have rendered us in this work.

[11] Incidentally we may mention that these serums had been kept for two years in glass phials at room temperature. Dr. Emery carried out the quantitative Wassermann reaction, referred to above, two years ago.

BRITISH SPA FEDERATION.—A notice has been issued on behalf of the Federation—comprising the Spas of Bath, Buxton, Cheltenham, Droitwich, Harrogate, Llandrindod Wells, Leamington, Woodhall, and New Zealand—which emphatically contradicts all statements giving the impression that these spas are closing on account of lack of fuel. There is no truth in such statements; the fuel-supply arrangements at all the spas named are such as to enable them to carry on for some time to come. The opposite impression is widespread, as proved by the numerous letters and telegrams now arriving at the spas, but there is no fear of any such disastrous position.

A REPORT ON THE FIRST YEAR'S WORK OF A CLINIC FOR SYPHILITIC CHILDREN.*

BY REGINALD C. JEWESBURY, M.A., M.D. OXON., F.R.C.P. LOND.,

PHYSICIAN IN CHARGE OF THE CHILDREN'S DEPARTMENT AT ST. THOMAS'S HOSPITAL, LONDON.

RATHER more than a year ago it was decided to form a special clinic in the Children's Department of St. Thomas's Hospital for children suffering from syphilitic infection. One morning a week has been set aside for this clinic, which draws its cases from the rest of the children's department and other special departments, including that for venereal disease, under the direction of Colonel L. W. Harrison, D.S.O.

I wish to confine my remarks to the findings of this clinic. During the first 12 months a total of 145 children were seen whose mothers were known to be syphilitic. Of these, 9 mothers became infected after the births of their children, hence the disease in these children was acquired. Of the remaining 136 mothers, infected *before* the birth of the child, 47 had treatment before or during pregnancy. In 89 cases the mothers had received no treatment previous to the birth of the child.

Incidence.

First with regard to the incidence of the disease in families as it affects the children born of syphilitic parents: in about 50 per cent. of the cases the disease was most marked in the earlier pregnancies, and appeared to become gradually attenuated, apparently healthy children coming at the end of the family (Regular type). But in just as many cases children apparently free from infection cropped up irregularly in the midst of definitely syphilitic children and miscarriages (Irregular type).

Examples of Regular Type of Family.

A. (i.)

1, 2, 3. Healthy children.
Infection—
4, 5. Premature child, lived one day.
6. ,, ,, stillborn.
7, 8. Stillborn. 9. Miscarriage.
10, 11. Apparently healthy children. W.R. negative.

A. (ii.)

1. Died at 18 months. "Fits."
2. Miscarriage at 4½ months.
3, 4. ,, ,, 6 weeks.
5. } Twins. } D. syphilitic child; Wassermann positive.
6. } } M. apparently healthy; ,, negative.

In this case the syphilitic twin showed obvious clinical signs of disease, whilst the other one was free from all such signs, and the Wassermann reaction was repeatedly negative up to 6 years of age.

Examples of the Irregular Type of Family.

B. (i.)

1. Seven-months' child; died at 3 days.
2. Eight ,, ,, ,, 7 ,,
3, 4. Stillborn.
5. Now living, aged 19 years; healthy.
6. ,, ,, ,, 17 ,, ,,
7. Stillborn. 8. Died at 7 days.
9. Stillborn; macerated foetus. 10, 11. Miscarriage.
12. Now living, aged 9 years; W.R. +; interstitial keratitis.
13, 14. Miscarriage. 15. Twins, stillborn. 16. Miscarriage.

B. (ii.)

1. Died at 9 months.
Then six miscarriages.
8. Died at 3½ years ("heart disease").
9. Now living; W.R. + + +.
10. Died at 2 years.
11. ,, ,, 11 weeks ("bronchitis").
12. ,, ,, 2½ years ("wasting").
13. Now living, aged 4 years; apparently healthy; W.R. negative.
14. Died at 14 months (blind).
15. Now living, aged 1 year; W.R. + + + +.
Mother, W.R. + + + +.
Treatment begun since birth of last child.

* A summary of this work formed a contribution to the recent discussion on congenital syphilis held by the Children's Section of the Royal Society of Medicine.

Signs in the Child.

(1) A few children of syphilitic mothers who had received no treatment were quite free from any signs, and have given negative Wassermann reactions even up to the age of 10 to 14 years.

(2) Many children showed the usual signs seen in typical congenital syphilis, in whom rash and snuffles appeared two to eight weeks after birth.

(3) In a certain number of children seen, in whom there was no history of previous symptoms, symptoms developed late, after the fifth or sixth year—i.e., "lues tarda." This group amounted to 10 per cent. of all cases examined.

In these children lesions of the following structures were present: bones—periostitis; joints—synovitis; eyes—interstitial keratitis; brain—particularly affecting mental condition; ears—deafness; and teeth.

Cases Illustrative of Late Changes.

CASE 1.—E. F., boy, aged 12 years. Family history: two stillborn children previous to birth of this child. The latter healthy at birth; full time; no rash or snuffles; apparently normal child up to 5 years. First changes were mental, lack of concentration, loss of memory, &c. Boy much undersized; no definite physical stigmata. Skin, teeth, and bones—no signs. Eyes: pupils sluggish to light, equal. No keratitis; fundi normal. Viscera: spleen and liver not enlarged; reflexes normal; no ataxy. W.R. of blood and cerebro-spinal fluid + +.

CASE 2.—J. R., boy, aged 11½ years. Family history as follows: (1) Died soon after birth; (2) stillborn; (3) died at birth; (4) stillborn; (5) the patient, W.R. + + + +; (6) living, W.R. + + +; (7) living, W.R. + + +; (8) living, W.R. —. No definite notes of mother's treatment; said to have had some treatment five years before birth of this child. Child full time, no signs during infancy. "Meningitis" at 2 years, very ill for two months, good recovery, well up to 9 years, then complained of frequent headaches, became dull and stupid. At 10 years became clumsy and began to lose use of limbs. Sight good. Not deaf. A big, well-developed boy, coarse features, high palate, very dull. Slight glandular enlargement. No other signs. Fundi normal. Reflexes normal. W.R. reduced after seven injections N.A.B. and mercury by mouth.

Wassermann Reaction as a Means of Diagnosis.

This has been found to be a very valuable and reliable test. In the case of syphilitic infants, the reaction is often negative during the first few months of life and later becomes positive. In cases where the test is negative at first it has been repeated every six months until the child is 2 years old. The reactions have been carried out in the Pathological Department under the direction of Professor L. S. Dudgeon.

Effect on Child in Untreated Syphilitic Mother.

Seventy-seven families investigated; total number of pregnancies, 322. Of these 97 (30·2 per cent.) resulted in miscarriage or stillbirth, 73 (22·8 per cent.) resulted in death in infancy or early childhood, and 152 (47·0 per cent.) were still alive at time of investigation. Mortality of children born alive = 32·4 per cent.

Effect on Child when the Mother was Treated Before or During Pregnancy.

Number of cases investigated, 43. Treatment varied from three courses of N.A.B. and mercury down to a few doses of mercury as late as the ninth month of pregnancy. Number of cases treated effectively before or during the early stages of pregnancy, 39. Total number of pregnancies, 53. Of these, 1 resulted in miscarriage, 6 in death in infancy, 46 in living children. There were therefore 87 per cent. of living children at time of examination. Actual mortality of this series of children was 11·5 against 32·4 of the former series. It was found that where the treatment of the mother was not begun until the seventh month or later of pregnancy that the child usually showed well-marked evidence of syphilis, but in the majority of mothers who had received treatment not later than the fifth month of pregnancy the children were born apparently healthy and gave negative Wassermann reactions.

CASE 1.—Mother treated two N.A.B. injections at eighth month and Hg by mouth. Child showed syphilitic lesions at 3 months.

CASE 2.—Mother treated six N.A.B. injections at seventh and eighth months and Hg by mouth. Child syphilitic and W.R. + + at 4 months.

CASE 3.—Mother treated sixth, seventh, and eighth month with seven N.A.B. injections and Hg injections. Child healthy and W.R. negative up to 10 months.

CASE 4.—Mother, who had had four miscarriages and four children dying early in infancy with strongly positive W.R., was treated fourth to eighth month with five N.A.B. injections and Hg by mouth. Child born healthy; under observation for one year and nine months, remaining healthy, and W.R. negative.

Effect of Treatment on the Child.

Method.—In most cases novarsenobillon was given intramuscularly into the buttock. Dose 0·015 g. per kilo of body weight, with gradually increasing doses, at intervals of one week, for six injections. In some cases a second course has been given at an interval of about three months. Simultaneously, mercury in the form of hydrarg. cum cret. in ½–1 gr. doses by the mouth t.d.s., this being kept up regularly. In a few severe cases mercurial inunction has been ordered. In the majority of cases the N.A.B. injections have caused no kind of ill-result. A few cases were followed by pain for some time after, and induration at the site of injection. No case has been followed by suppuration. In a few cases a slight general reaction was set up, with headache, drowsiness, and vomiting, usually not lasting longer than 12 hours. In the older children the N.A.B. has been given intravenously.

Taking blood from child for Wassermann reactions.—(1) From vein of scalp or arm or internal jugular vein depending on age; (2) from heel into capillary tube; (3) from longitudinal sinus through anterior fontanelle. (This method only in a few cases.)

Effect of Treatment on Wassermann Reaction in the Child.

In 30 cases receiving full course of N.A.B. and Hg and kept under observation the W.R. has been changed from "positive" to "negative." In some a strongly positive reaction has been reduced. In some the reaction has not been affected after a course of six injections of N.A.B. and Hg. The cases benefiting least by treatment with regard to the Wassermann reaction and physical signs are those of the late manifestations affecting children from 5 to 10 years, and especially those cases in whom the central nervous system is involved.

Effect of Treatment on Clinical Signs of Disease in the Child.

Early signs quickly cleared up, especially rashes and condylomata. Rhinitis less easily cured. Usually rapid improvement in general condition, with steady gain in weight. Liver and spleen reduced in size.

Late cases.—No case of disease of the central nervous system affected. Interstitial keratitis; some definite improvement of vision in several cases. Periostitis definitely improved.

The number of cases is rather small so far, but I hope this analysis of them will be considered worthy of recording. I am indebted to several kind assistants in this work, but particularly to Dr. J. C. Spence, who has kept very careful notes of every case seen and has also helped with the clinical work.

SIMILARITY OF EFFECTS PRODUCED BY ABSENCE OF VITAMINS AND BY EXPOSURE TO X RAYS AND RADIUM.

BY W. CRAMER, D.SC. EDIN., PH.D. BERL., M.R.C.S.,
A. H. DREW, D.SC. LOND.,
AND
J. C. MOTTRAM, M.B. LOND., D.P.H.

(From the Imperial Cancer Research Fund, and from the Radium Institute, London.)

FROM the fact that the absence of vitamins from the diet leads to a gradual decline of the higher animals, and if sufficiently continued is incompatible with maintenance of life in these animals, the important generalisation has been drawn that vitamins are essential for the life of the cell. Histological investigations of the tissues and organs of animals kept on such a diet have so far failed to reveal any lesion sufficiently gross and affecting a vital organ which would account for the decline or the death of the animals. Our own observations on mice and rats kept on a diet completely free from vitamins have, with the one exception presently to be mentioned, given the same result. Even the finer cytoplasmic structure, as expressed in the condition of the mitochrondria, is not altered deeply enough to account for the condition of decline and the death of the animals. Nor does the general condition produced by the absence of vitamins help to an understanding of the manner in which they act. For the general condition of these animals is simply one of inanition, and many of the changes described as occurring in the tissues of animals kept on a vitamin-free diet are similar to, or identical with, those produced by chronic starvation. The hypertrophy of the adrenals may be quoted as an example.[1,2]

It appears to us that this hypertrophy of the adrenals in the absence of vitamins is an argument against the generalisation that vitamins are essential to the life of every cell. They do not appear to be essential to the life of either the cortical or the medullary cells of the gland. Subsidiary assumption would have to be made, for instance, that this organ is distinguished by a large store of vitamins. But such an assumption is negatived by the experimental test,[3] at least as regards the fat-soluble vitamin, and has never been demonstrated for the water-soluble vitamin. In mice and rats kept on a vitamin-free diet very active growth changes, as evidenced by the occurrence of mitoses, have also been observed in the cells of Lieberkühn's follicles, even in the last stages of avitaminosis. Similarly transplanted tumours show active growth in animals kept on a vitamin-free diet and suffering severely as the result of the absence of vitamins.

Vitamins Unnecessary for Life of Individual Cells.

The generalisation that vitamins are necessary for the life of the cell has been extended so as to cover even the lower forms of life, plants, bacteria, yeast cells, &c. The recent work of Lumière[4] has shown that so far as these lower forms of life are concerned this view was based on faulty experimental observations. It is therefore important to realise that what has been experimentally established is the fact that vitamins are essential for the maintenance of life of a highly differentiated animal as a whole, *but not necessarily, or probably, of its individual cells.*

There is, however, one tissue which is specifically and profoundly affected by the absence of vitamins from the diet—namely, the lymphoid tissue. In mice and rats kept on a diet completely free from vitamins there is a great atrophy of the lymphoid tissue, which is obvious even to the naked eye. The spleen is shrunk to a narrow ribbon; the thymus, which even in adult rats and mice remains relatively a large organ filling the upper part of the thorax and covering the base of the heart, becomes so small as to be hardly visible. The Peyer's patches, which are prominent in normal animals, are difficult to identify with the naked eye. Microscopically these organs, especially the spleen, are found to contain very few leucocytes. The ordinary lymph glands may not be macroscopically smaller than normal, but under the microscope are found to be almost bare of lymphocytes. They consist almost entirely of endothelial cells and large empty lymph spaces. The blood picture, as shown by a differential count, shows a reduction in the number of lymphocytes and an increase in the number of polymorphonuclear leucocytes.

Extreme Reduction of Number of Lymphocytes.

As an example of the degree to which the lymphocytes may be affected, the following extreme figures obtained in a mouse and a rat in the final stages of avitaminosis may be given. These animals did not suffer from any intercurrent infection. The differential counts give figures varying a good deal for different individual animals, and the examples given represent the extreme

	Lympho-cytes.	Large mono-nuclears.	Poly-morphs.	Mast cells.	Eosino-philes.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Avitamin rat No. 130.	25	15	57	2	1
Normal rat.	54	7	37·5	1·3	0·2
Avitamin mouse No. 140.	6	23	71	0	0
Normal mouse.	60	21·5	17	1·4	0·1

change so far as the lymphocytes are concerned. The figures for the normal animals are taken from Eyre's Bacteriological Technique (second edition, p. 374), and represent the average of a large number of counts. Our own observations on normal animals agree with these figures within narrow limits.

Similarity with Action of X Rays and Radium.

This condition of the lymphoid tissue is practically identical with that produced by exposure to X rays and radium. These agents, if given in appropriate dosage, not only have the same effect as regards the lymphoid tissue, but they also produce the same general effect on the animals—they lose weight and die in a state of emaciation. Incidentally, it may be recalled that in this condition there are also degenerative changes in the semiferous tubules of the testis similar to those observed in avitaminosis.

Why two such apparently dissimilar causes should produce the same effects is a problem which we propose to investigate further. It is a remarkable fact that the specific atrophy of lymphoid tissue, whether produced by exposure to radiations or resulting from the absence of vitamins from the diet, should be associated with such a profound general effect on the nutrition of the animal. This fact indicates that lymphoid tissue fulfils a more important function in connexion with the nutrition of the animal than is generally recognised, and that the effect produced on the general nutritive condition of the animal by these different agencies may be due to their selective action on the lymphoid tissue. This suggestion finds confirmation in the following facts. It is known[5] that lymphocytes are concerned in the absorption and assimilation of fat, and experimental evidence has been presented[6] to show that the assimilation of protein from the intestinal canal is brought about partly by the agency of leucocytes. In certain marasmic conditions in children not due to interference with the food-supply there is an atrophy of the thymus and of the Peyer's patches, and no other lesion has so far been found to account for the condition.[7] In inanition the spleen is stated to be the organ showing the greatest atrophy.[8] This and an almost complete disappearance of the thymus has also been reported recently[9] as occurring in pigeons both in inanition and in experimental beri-beri. A systematic examination of the lymphoid organs generally in these various conditions does not appear to have been made.

(Continued at foot of next column.)

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON ARTIFICIAL RESPIRATION IN THE NEW-BORN.

BY W. OSBORNE GREENWOOD, M.D. LEEDS, B.S. LOND.

(From the Acomb Nursing Home, Harrogate.)

THE method of artificial respiration described below has proved, in my experience, more certain and effective than any of the methods now in vogue. I was led to investigate it by noting that a new-born infant who had inspired liquor amnii and was held head downwards emitted a sigh. This I supposed to be due to the pressure of the abdominal viscera on the diaphragm. As this is equivalent to expiration, I concluded that to hold the child in the reverse position would initiate inspiration.

To use the method the infant should be held in the following way:—

The back of its neck lies on the palmar surface of the operator's left hand, the occiput being supported in the hollow between the thumb and forefinger, so that the thumb and fingers grasp the mastoids. The right hand holds both ankles of the infant firmly from behind, so that the ulnar side is at the calves, the radial side at the ankles. The infant is held nearly vertical, say at an angle of 15°, and is then allowed to move quickly by its own weight downwards, feet first, about 2 feet. The abdominal viscera move down, the diaphragm is depressed and inspiration is at once initiated. The infant is now lifted, feet first, upwards and to the right of the operator and is therefore head downwards

Three Positions of the Infant in the Method of Artificial Respiration described by Dr. Greenwood.

First position, for movement downwards to imitate inspiration. Second position, for movement downwards to imitate expiration. Rest position between movements.

(Continued from previous column.)

References.—1. McCarrison, R.: Indian Jour. Med. Research, 1919, vii., p. 188. 2. Vincent and Hollenberg: Proc. Physiol. Soc., 1920, p. 69; Jour. of Physiol., 1921, liv. 3. Emmett and Luros: Jour. Biol. Chem., 1919, xxxviii., p. 441. 4. Lumière: Annales de l'Inst. Pasteur, 1921, xxxv., p. 102. 5. Schäfer: Text-book of Microscopic Anatomy, 1912, p. 541. 6. Cramer: Jour. of Physiol., 1908, xxxvii., p. 146; Cramer and Pringle: Ibid., p. 158. 7. Patterson, D. H.: Private communication. 8. Weiske: Z. Physiol. Chemie, 1896, xxii., p. 485; see also Schäfer: Text-book of Physiology, 1898, vol. i., p. 890. 9. Findlay: Jour. of Path. and Bact. 1921, xxiv., p. 175.

at an angle of 15° to the vertical. It is then moved quickly downwards, head first, about 2 feet. The abdominal contents fall against the diaphragm which is now pushed upwards (relatively to the child) and fully arched, and expiration is completed. The series of movements should be repeated some fifteen times a minute and the first attempt will often elicit a sigh if not a more pronounced response. Needless to say, any semblance of violence must be avoided.

As compared with Schultze's method it achieves exactly the same object—i.e., the abdominal viscera are made to arch and flatten the diaphragm alternately and to stimulate the heart as massage would do. Advantages over it are: As the infant is held firmly at each pole he is not so liable to slip; since the range of movement is not as great the cooling of the body surface must be less; it is not as violent; the gentleness of the movements are entirely under the control of the operator. Byrd's method and Marshall Hall's method consist in alternately flexing and extending the infant's body to the full extent: the former actively by holding both poles, then flexing and extending the spine; the latter passively by holding the infant horizontally on the palm of one hand, ventral surface downwards, then on the palm of the other hand, dorsal surface down, the head and lower limbs accomplishing flexion and extension by their own weights. Both methods are excellent for the milder grades of respiratory inhibition, but not as effective as the above for the severer ones.

Harrogate.

A CASE OF ACETANILIDE POISONING; RECOVERY.

BY HASSAN EL ARCULLI, M.B. LIVERP., M.R.C.S., D.P.H.

A GIRL, aged 2 years, was brought to me on Sept. 4th, 1919, by her mother with the history of having ingested about 30 anti-influenza tablets some two hours before. It appeared that while the mother was engaged in some household duty the girl and her brother, aged 3 years, got hold of a box of these tablets. The boy sucked the sugar coating, and what remained was given to the girl, who swallowed it.

On examination the child appeared prostrated and somewhat cyanosed, especially around the mouth. Pulse feeble and irregular, its rate being 120; respirations 20. There was profuse sweating; temperature was 97° F. in the axilla. A provisional diagnosis of poisoning by some coal-tar derivative was made. An emetic of mustard and water was given and a saline purgative administered; these acted well, and the child when seen four hours later appeared less blue. The mother was instructed to keep her near a fire, and liq. strychninæ was given—mj. every two hours.

On the 7th the mother said that the girl was very irritable the night before and was inclined to arch her back. She reported that the cyanosis came in spasms; sometimes the colour was quite good, while at other times the face would be blue; the periods of cyanosis varied in duration from a few minutes to an hour. The knee-jerks were +.

Professor R. J. M. Buchanan was called into consultation and he gave a hopeful prognosis.

Acting on his advice the strychnine was temporarily stopped and brandy-and-soda given in its place. A couple of days later the child seemed quite normal between the spasms of cyanosis. When examined during an attack the heart sounds were found to be weak but regular; respiration was also regular. Strychnine was again exhibited, mj. every four hours.

Meanwhile it had been ascertained from the manufacturing chemists that the tablets were made from: acetanilide, gr. i.; quinine sulphas, gr. ss; podophyllin, gr. $\frac{1}{30}$; camphor, gr. $\frac{1}{4}$.

On Sept. 11th bronchitis developed, and a measly rash appeared. The temperature, which had become normal on the day following the taking of the poison, rose to 101° F., and it was a question whether the rash was due to measles or to the effects of the acetanilide. It was, however, thought wiser to err on the safe side, so the child was isolated and she got over the complication in a few days. It was quite seven weeks before the cyanosis and sweating disappeared altogether. At no time was there any sign of methæmoglobinuria.

Apart from the treatment applied, the result may have been due to the presence of the other ingredients in the tablets, or the child may not have swallowed the large number alleged, although on this point the mother is quite firm in her belief.

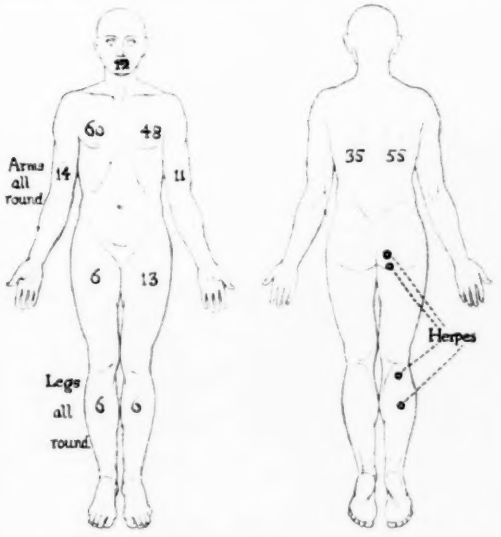
Liverpool.

A CASE OF ABERRANT HERPES.

BY G. DE BEC TURTLE, M.D. DURH., M.R.C.P. LOND.

THE differential diagnosis between varicella and herpes occasionally presents difficulty, and the following case appears of interest in this connexion:—

A gentleman, aged 71, consulted me for pain in the back and a skin eruption which had only been noticed a few hours. On examination there was a well-marked patch of herpes zoster on the right buttock and in addition a few vesicles were distributed over the body generally. There was no constitutional disturbance of any kind. On the following day there were four patches of herpes extending from the right buttock to the ankle, down the back of the thigh and knee. He was also covered with a distinct vesicular eruption very closely resembling that of varicella, several of the vesicles being umbilicated. For the sake of interest the vesicles were counted: they numbered 266 and



were distributed as follows: 12 over the face and scalp, 108 on the trunk anteriorly, 90 on the trunk posteriorly, 14 on the right arm, 11 on the left arm, 12 on the right leg, and 19 on the left leg. There was none apparent on any mucous membrane.

The diagnosis rested between an attack of varicella occurring at the same time as the outbreak of herpes zoster in the leg and generalised or aberrant herpes, which I think the condition undoubtedly was. This view was shared by Dr. Graham Little, who saw the case in consultation with me. The condition cleared up quite quickly in a few days, simultaneously with the original patch of herpes zoster. There was no evidence of any case of varicella either before or after in the patient's house.

Cambridge-terrace, Hyde Park, W.

PRESENTATION TO A MEDICAL MAN.—On April 26th a presentation was made by the staff of King Edward's Building of the Post Office to Dr. S. B. Pennington on his transfer from the E.C. District Office to the Western District Office. Dr. Pennington was medical officer for the staff at King Edward's Building for seven years, and during that time earned the esteem of all grades of the manipulative staff for his considerate, sympathetic, and courteous treatment. The presentation consisted of a suit case and a cheque. The medical officers present included Dr. B. G. Connelly, Dr. A. Benson, Dr. H. Palmer, and Dr. H. H. Bashford.

Medical Societies.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

AT a meeting held on April 13th, with Dr. L. E. V. EVERY-CLAYTON, the President, in the chair, Mr. C. A. JOLL (London) gave an address on the

Surgery of the Thyroid Gland,

based on 432 cases operated on by himself and illustrated by a number of epidiascope pictures.

Discussing the ætiology of various forms of thyroid disease, he objected to the septic theory of the origin of exophthalmic goitre on the ground that there was no evidence to support it. He spoke of various forms of thyroiditis, alluding to the chronic "ligneous" thyroiditis of Riedel, and the possibility of mistaking it for malignant disease. The occasional association of adenomata with thyrotoxic symptoms, and the formation of adenomata within simple parenchymatous goitres, as well as the possibility of malignant changes within the latter, were touched upon. Turning to Graves's disease, Mr. Joll gave it as his opinion that it was to be distinguished from "non-hyperplastic toxic goitre," a distinction of importance in view of the smaller surgical risk of cases in the latter group. He laid stress on the relation between Graves's disease and progressive myocardial degeneration, speaking of the value of electrocardiography in tracing the course of the latter. Operation is, he said, indicated for any simple goitre causing pressure symptoms unless it respond quickly to other forms of treatment; also for simple goitre causing toxic symptoms and other forms of chronic ill-health. He claimed, further, that Graves's disease was curable only by early operation: saying, however, that patients with this disease, who did not wish to undergo operation, should not be pressed to do so, as such patients did not do well. The technique of operation was demonstrated by an admirable series of line drawings, and something was said as to the value of ligation of the superior thyroid artery as an alternative to thyroidectomy in certain cases. Local anæsthesia, Mr. Joll thought, was indicated only in the presence of much stridor or cardiac disease, or where the patient feared a general anæsthetic. On the other hand, general anæsthesia should never be deep, not more than enough to stop involuntary movement. Some of the difficulties and dangers of operation were discussed. Acute post-operative hyperthyroidism was, in the speaker's experience, a rare complication. He claimed that surgical treatment resulted in a cure of Graves's disease in 75 per cent. of the cases operated on. Recurrence of symptoms after operation was due to failure to remove enough of the gland.

The paper was followed by a discussion, in which the PRESIDENT, Mr. E. W. HEY GROVES, Professor F. H. EDGEWORTH, Dr. C. F. COOMBS, Mr. STUART V. STOCK, and Mr. J. LACY FIRTH joined.—In his reply Mr. JOLL said that he had never seen myxœdema follow thyroidectomy for Graves's disease.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A CLINICAL meeting of this Society was held at the Norfolk and Norwich Hospital on April 5th, Sir HAMILTON BALLANCE, the President, in the chair.

Dr. S. H. LONG showed a child who had had splenectomy performed for splenic anæmia, with excellent results. He also exhibited the spleen removed.

Dr. F. W. BURTON-FANNING read notes of a case of

Rat-bite Fever,

and demonstrated the points of interest on the patient. He remarked on the rarity of the disease, only 15 cases having been recorded in the British Isles, two of which had been under his care. The fever always followed on the bite of a rat or of an animal, such as a ferret or cat, which had been bitten by a rat. There was an incubation period after the bite, when the wound became re-inflamed and sloughy, but there was no formation of pus. The patient shown was bitten on the thumb, and an unhealthy sloughing wound was seen. Lymphangitis was a conspicuous feature and was followed by a rash which very much resembled a papular secondary syphilitic rash. The disease was caused by a spirochæte, which, however, had not been found on direct examination of the patient's blood, but was discovered when some of his blood had been injected into a white mouse. The fever was of intermittent type. As to treatment, quinine was found to be quite useless, and the only treatment of any value was the intravenous injection of novarsenobillon.

Mr. A. J. BLAXLAND showed the Pedunculated Intra-vesical Middle Lobe of a Prostate causing urinary obstruction, without hypertrophy of the lateral lobes, which he had removed from a man of 56 with complete relief to the symptoms. He also exhibited three specimens of the Pyloric Half of the Stomach, which he had excised for chronic ulceration. In his opinion this operation was more satisfactory than the usual one of excision of the ulcer by itself. It was easier to perform, there was practically no shock at the end of the operation, and the immediate after-results in his cases had been excellent.—The PRESIDENT said that Mr. Blaxland had raised a very important surgical question. He agreed as to the comparative simplicity of this operation, but he considered that for most small ulcers in an accessible position local excision did all that was required.

The PRESIDENT exhibited an Ovarian Tumour, weighing 10 lb., with a twisted pedicle, which he had removed from a woman of 51. A peculiar feature of the case was that he found an extensive thrombosis of the veins in the omentum. In order to deal adequately with this thrombosis it would have been necessary to remove several feet of the small intestine and its mesentery, and he decided not to interfere. No bad symptoms had occurred, and he therefore concluded that after the removal of the large twisted tumour the thrombosed condition of the veins subsided.

Dr. A. BURTON showed a specimen of Tubal Mole from a case of Ectopic Gestation of less than two months' duration.

Dr. A. J. CLEVELAND brought forward a case of Occupation Neurosis in a man, aged 28, who had worked in a boot factory, and developed a condition of pseudo-chorea. The right arm was chiefly affected. When the patient extended the arm to do anything it developed incoördinated movements, and the condition was so severe that the man was quite unable to work. Treatment seemed to have no effect, and in Dr. Cleveland's opinion the prognosis was very bad.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the Royal Devon and Exeter Hospital on April 21st, Dr. W. GORDON in the chair.

Dr. F. A. ROPER read a paper on the

Nature and Treatment of Surgical Shock.

He first acknowledged the great help given to all who had specially to deal with this condition during the war by the reports of the Medical Research Committee and Third Army Shock Committee. After differentiating between primary and secondary shock, he went on to describe the blood changes in the latter condition found experimentally in animals by Dale, Laidlaw, Trevan, and Bainbridge, and also found in man. These were due to leakage in the capillary area, and accompanied by fall of blood pressure, cold being a further important factor in producing stagnation. An invariable result of this stagnation, leading to deficient intracellular oxidation, is acidosis. The defect of the adrenalin theory of shock is that shock is often fully developed long before sympathetic adrenalin exhaustion can have occurred. This leads to the consideration of other possible factors, first and foremost the respiratory exchange. The automatic compensating acidosis postulated by the acapnia theory might well be at least a considerable additional factor, in view of the well-known observation that acids dilate peripheral vessels. Cannon's experiment of clamping the aorta and observing the resulting acidosis and shock on removal of the clamp was corroborative and should be remembered in using the tourniquet. There was, lastly, considerable similarity between the reaction of the body towards infection and towards injury by violence. Dr. Roper showed that, as regards treatment, it was important to draw a sharp distinction between hæmorrhage and shock, best distinguished in doubtful cases by the use of the hæmoglobinometer. Dr. Roper advocated the method of "forced fluids" in the treatment of shock, and spoke of the advantages of Bayliss's 6 per cent. gum acacia solution in normal saline in largely obviating leakage from the circulation. No striking results seemed to be obtained by use of alkaline solutions, but the consensus was that these were of benefit in acid-forming toxæmias resembling shock. Blood transfusion was of great value in shock, but results were not so striking as in hæmorrhage. In Dr. Roper's opinion the citrate method was to be preferred. He urged the advantages of nitrous oxide and oxygen anæsthesia in obviating further shock due to fall of blood pressure during or after operation, and envisaged the possibilities of future progress in successful treatment on the lines of keeping

up the CO_2 tension in the blood by administering a proportion of CO_2 in the respired atmosphere at least equal to its normal alveolar tension. In judging as to fitness for operation the estimation of the blood pressure was a valuable guide.

Discussion.

The PRESIDENT asked Dr. Roper what opinion he had formed as to the value of pituitrin in these cases and as to the maximum period of time that it was possible to keep the patient under with $N_2O + O$ as the sole anæsthetic.

Mr. A. L. CANDLER discussed the apparently contradictory statements with regard to acidosis, which was stated to be a stimulant to the respiratory centre, and the giving of soda, which also had a beneficial effect in cases of shock. In regard to shock from loss of blood (where the treatment was obviously different from that called for in shock caused by other conditions) Mr. Candler emphasised the importance of the rate of flow rather than the volume of blood lost as the causal factor in the production of shock. He also advocated the cleaning of burns under an anæsthetic as soon as possible and the removal of destroyed tissues, thereby diminishing the liability to subsequent absorption of a large amount of toxin. Shock following the removal of a tourniquet was to him a clear indication of what happened when the patient was not safeguarded from a sudden rush of toxin into the circulation. Mr. Candler had seen no benefit from pituitrin in the treatment of shock, although he recognised its value as a promoter of intestinal activity.

Dr. J. SHIRLEY STEELE-PERKINS advocated gas and oxygen as a general anæsthetic, given a reliable apparatus with an efficient regulator.

Dr. R. V. SOLLY discussed the question of acidosis and its production in chloroform narcosis.

Mr. NORMAN LOCK considered that the condition of shock was far more complicated than a mere acidosis, as soda was of little more use than saline. Given an increased viscosity, as by gelatin injections, the saline does not rush in and out and tension is repaired in the circulation.

Dr. ROPER, in his reply, considered that there was no practical time limit in the giving of N_2O and oxygen as a general anæsthetic. He was not in favour of an anæsthetic such as ether in burns where shock was often present. He also spoke of the reducing effect on the hæmoglobin content of the red blood cell when either chloroform or ether were employed as anæsthetics. Boyle's apparatus had proved very serviceable at the C.C.S. to which he was attached in France. Replying to Mr. Lock, histamine was the acid substance actually causing acidosis.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A MEETING of this Society was held in the Faculty Hall, Glasgow, on April 1st, when Dr. JAMES H. MARTIN made a communication on

A Series of 50 Consecutive Cæsarean Sections without Fatality.

Dr. Martin opened by referring to his technique in this operation, which was a modification of that introduced by Professor Murdoch Cameron. His incisions are made about an inch and a half to the right of the middle line, two-thirds being above the level of the umbilicus. This utilisation of the rectus and its sheath prevents a subsequent hernia. There is the further advantage that as a rule this abdominal incision brings the operator right down on the middle line of the uterus. In making the uterine incision Dr. Martin always uses a metal pessary, oval in shape and slightly concave, as suggested by Professor Cameron. In removing the placenta and membranes he turns the uterus inside out. Thus the uterine arteries are kinked and the loss of blood is infinitesimal. The wall of the cavity of the uterus is now rubbed thoroughly with gauze, which may be termed a curettage. The difficulty in removing the membranes in the region of the os is lessened by sweeping the finger round beyond the internal os while the patient is being prepared for operation.

In suturing the uterine wound the lowest suture is inserted and tied before the uterus is turned inside in, and this seems to lessen the hæmorrhage while the other sutures are being inserted and tied, particularly if the uterine arteries are not well compressed. The sutures are of silk and interrupted. If the patient is not sterilised mattress sutures of catgut are usually inserted along the uterine incision, the peritoneum, and to some degree the superficial muscle, being included in these mattress sutures. The peritoneum and posterior sheath of rectus muscle are sutured together with a fine continuous catgut suture, and five or six silkworm gut sutures are inserted through skin and anterior sheath of the rectus, but not tied. The anterior sheath of the rectus muscle is now sutured with a continuous catgut suture and the skin approximated by another continuous catgut suture. After cleansing the wound and surrounding skin a gauze pad is applied and anchored by tying the five or six silkworm gut sutures referred to above. Gamgee tissue is applied and fixed with 6 in. bandages. After the operation the patient is propped up in the sitting posture before being completely round from the anæsthetic. The advantage of this posture is that the lochia when shed flows through the cervical canal into the vagina and on to the pad, and is not retained in the uterus. Further, micturition and defæcation are not difficult in this position.

Dr. SAMUEL J. CAMERON made a communication on the Surgical Treatment of Uterine Prolapse.

Reviews and Notices of Books.

COLLECTED PAPERS OF THE MAYO CLINIC.

Edited by Mrs. M. H. MELLISH. Vol. XI., 1919. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 1331. £3.

IN reviewing the eleventh annual volume of the collected papers of the Mayo Clinic, Rochester, Minnesota, it is tempting to discuss, instead of the contents of the book, the organisation of the great clinical machine which produced it. The methods of the Clinic are, however, too well known to need further publicity, and the matter in the book covers such an enormous field that to attempt to appraise its value is quite a sufficient task. A volume of miscellaneous papers by numerous contributors can with difficulty avoid the imputation of "scrappiness," but in the present case the number of papers is large enough to permit of their being to some extent grouped under regional headings, so that each division gives a more or less comprehensive view of the lessons that have been learnt during the year.

The first and most important section deals with the surgery of the alimentary canal, and is restricted chiefly to problems connected with the stomach, duodenum, and gall-bladder. The cause of gastric and duodenal ulcers is sought for by means of an anatomical study of the arteries supplying them, and the conclusion is reached that the disposition of the vessels along the lesser curvature and the first inch of the duodenum is such as to favour the occurrence of thrombosis. There is no conclusive evidence that ulcers are in this way "explained," but the demonstration is suggestive. Another paper deals with the estimation of the "operability" of carcinoma of the stomach by means of the X rays, but in view of the difficulty in any early case of making a definite diagnosis of the presence of the disease it is evident that this determination of operability admits only of a limited application. Dr. C. H. Mayo discusses the technique of the surgical treatment of carcinoma of the stomach by gastrectomy, and brings up to date his survey of the work done; his results show a recent increase in the percentage of three-year cures obtained and are so far satisfactory. Another important paper deals with the subject of the diagnosis of gastro-jejunal ulcer following treatment by gastro-enterostomy, and the opinion is expressed that it is usually due to a mishap in the operative technique, thus confirming the conclusions of other surgeons. The most interesting paper of all on the stomach is by Dr. D. C. Balfour, who discusses the treatment of the "bleeding type" of ulcer. He seeks to demonstrate that hæmorrhage commonly occurs after a curative operation has been performed, and believes that the treatment should always include the removal of the ulcer, preferably by excision with the cautery. The remainder of this section deals chiefly with biliary problems, special attention being given to the anatomy and functions of the sphincter of the common bile-duct or papillary muscle of Oddi.

The second section, on the urogenital organs, contains papers on most of the current problems of this region—the dangers of pyelography, the prognosis of

renal tuberculosis, the removal of stones from the ureter, and other subjects too numerous to mention. This section also contains, somewhat unaccountably, several papers on the thyroid gland and its functions, and one on the effect of splenectomy on the thymus. It is, at any rate, an indication of the trend of opinion that these organs should be classed as "urogenital." The papers on the thyroid gland include an elaborate investigation of the chemical properties of its active principle, thyroxin, and an important contribution towards the understanding of the clinical value of the "basal metabolic rate" in exophthalmic goitre. With this valuable method of gaining precise knowledge as to the results of operative treatment we dealt in some detail last week (pp. 915 and 921). A smaller section on the blood contains an extremely interesting account of an attempt to determine the length of life enjoyed by transfused corpuscles by means of differential agglutination of mixed corpuscles belonging to more than one blood group. This is one of the most scientifically satisfying of all the papers in the book.

The remaining sections deal with a somewhat heterogeneous collection of subjects, which it is impossible to summarise in a few words. They range from tuberculosis of the spine and epithelioma of the lip (this is an instructive study based on 537 cases), to the surgical treatment of bunions and the best method of sharpening a scalpel. There is matter here for everyone and, if some of the papers are so slight as to have been hardly worth reprinting, many more are really solid contributions to surgical science, and the book as a whole bears eloquent testimony to the activity and to the admirably scientific attitude of the workers in the Mayo Clinic.

MEDICINE AND DISEASE.

Die Konstitutionelle Disposition zu Inneren Krankheiten. Second edition. Von Dr. JULIUS BAUER. Berlin: Julius Springer. 1921. With 63 illustrations. Pp. 650. M.88.

MODERN advances in medical science have altered our conception of ætiology, and causative factors of disease have occupied an increasing share of medical interest. Particularly in those morbid processes that result from specific bacterial infection, the ætiological riddle has seemed to be solved when a microbe, more or less obeying Koch's postulates in relation to the disease, has been isolated. The host's susceptibility and resistance to infection have not indeed been forgotten, as the important mass of work on the subject of immunology bears witness; nevertheless the soil has been somewhat neglected for the seed. In terms of practical medicine it may be said without much exaggeration, that interest has shifted from the patient to his disease, and this tendency has been strengthened by modern discovery in specific therapy; thus treatment has tended to make the same change in direction, and diphtheria, for instance, is treated with serum and the patient with contempt.

In the present volume Dr. Julius Bauer creates a new departure in medicine in presenting an instructive and important systematic treatise on the part played by constitutional states in the pathogenesis of disease, a thesis which he carries to the length of defining a "konstitutionspathologie." The opening chapters deal with the broader aspects of the subject and define the words employed; there is thus introduced an interesting discussion on diathesis, dyscrasia, and inheritance. Infantilism, precocity, senility, and progeria are other matters of interest discussed in these chapters, and the author crystallises his ideas so far as to give illustrations in diagram of the several recognised constitutional types—namely, the respiratory, digestive, muscular, and cerebral constitutions; photographs of patients illustrating these types are also given. It is impossible to describe at all adequately the great mass of information assembled in respect of the constitutional aspects of clinical disorders, diseases, abnormalities, and developmental defects. The rarest curiosities naturally claim a rather disproportionate notice, but some idea of the scope of the work is indicated by the fact that there are more than 4000 references to the literature.

We have no hesitation in recommending this book as a valuable work of reference, both on account of the information it provides and on account of the weight it adds to the constitutional aspect of disease.

The Medical Treatment of Disease. By ROBERT DAWSON RUDOLF, C.B.E., M.D. Edin., F.R.C.P. University of Toronto Press. 1921. Pp. 457.

THIS book, written for students and young practitioners of medicine, is presented in a readable and attractive form. The general arrangement of the subject-matter is good and systematical, so that it is easy to find at once any information required. An author incurs a great responsibility in advising definite forms of treatment to students and young practitioners unless the treatment advocated is well known and well tried. On this account the book is open to some criticism, for it includes reference to treatment that has hardly passed beyond the experimental stage. For instance, auto-serum therapy (intrathecal injection) is mentioned in the treatment of chorea, though the advisability of tonsillectomy is not discussed in either chorea or rheumatic fever; in the treatment of gastric ulcer it would have been better to give the Lenhartz diet in detail than to discuss duodenal feeding at relative length; it is possible that scarlet fever is due to a streptococcal infection, but, if it is, the type of infecting streptococcus has not yet been established, and it is premature to advise students to use vaccines as a prophylactic against this disease. These examples could be multiplied. Dr. Rudolf has made too great sacrifices in the effort to make the book up to date. In the doses of drugs recommended the author shows good judgment. Exception must, however, be taken to the dose of adrenalin chloride advised for hypodermic injection in the treatment of a paroxysm of asthma; 8 to 15 minims is too large an initial dose, since some persons are susceptible to the drug.

A simple book on treatment is sure of a place in the general practitioner's library, and the second edition of this book may fill that place. If it were revised by someone engaged in general practice certain of the more common and difficult aspects of medicine might be expanded and space found in the section on insomnia, for instance, for the sleeplessness that results from acidity, flatulence, or constipation.

PRINCIPLES OF GENERAL PHYSIOLOGY.

Third edition, revised. By WILLIAM MADDOCK BAYLISS, M.A., D.Sc., F.R.S., Professor of General Physiology in University College, London. With 261 illustrations. London: Longmans, Green and Co. 1920. Pp. 862. 28*s*.

OUR opinion, expressed when this work was first published, that it is "a most interesting, erudite, and comprehensive treatise" is unchanged, and we are glad to offer an equally cordial welcome to its third edition. The number of pages in the present edition only exceeds that in the first by a dozen or so. In the sections rewritten for the second edition (published in 1917)—e.g., activity of muscle, kidney and the visceral system, and transport of carbon dioxide in the blood—no great changes have been found necessary. But a notable addition is a section on the capillary circulation (p. 704 et seq.), with regard to which important work has recently been published. Krogh (1919 and 1920) gave experimental evidence that the capillaries can be affected independently of the arterioles, while more complete proof of the independent contractility and dilatation of the capillaries was given by Dale and Richards in 1918, including the observations of Dale and Laidlaw on the effects of the base histamine. In the same section "wound shock and traumatic toxæmia" is dealt with. Wounded men in the late war often showed the signs of great loss of blood, although the actual hæmorrhage may not have been at all severe. Evidence of various

kinds pointed to the probability that the injured tissues were producing some toxic substances. Although the toxic products from injured tissue have not been actually identified, they have the same physiological action as histamine—that is, a widespread dilatation of the capillaries leading to a pooling of blood and its withdrawal from the effective circulation, with all the serious results of a failure of blood-supply to vital organs. Experience has shown that the maintenance of a normal blood volume is of the greatest moment. Dilution of the blood up to very wide limits is of comparatively little significance so long as its volume is normal (p. 707).

Professor Bayliss utters a timely observation that in regard to medical education "there is some need to guard against too narrow an interpretation of what is supposed to be of direct application to clinical practice. What is at the present time looked upon as pure abstract or academic science may turn out next week to be of vital importance. Take, for instance, the electrical phenomena of cell activity and their application in the electrocardiograms." Without undervaluing what is done under the direction of another mind, Bayliss points out that the greater number of the fundamental discoveries in physiology were made by men who were able to direct their work in the way suggested by its actual progress.

DIAGNOSIS.

Diagnostische Winke für die tägliche Praxis. Second edition. Von Dr. E. GRAETZER. Berlin: S. Karger. 1920. Pp. 264. M.16.

THE object of this handbook is to give a short description of the atypical forms in which common diseases frequently appear in general practice. It is recognised that disease often fails to don its text-book garb, and thus may escape recognition by those without much clinical experience. The diseases are arranged in alphabetical order and there is a good index. A short account is given of the onset and of the cardinal signs and symptoms of each disease. Then follows a brief description of the various courses it may take, a list of atypical and occasional symptoms, and finally the differential diagnoses. The object is admirable, but the subject is too difficult for compression into so small a compass. The cardinal signs are not always well chosen, and in the case of rheumatic fever, for instance, there is no mention of valvular disease in the typical picture. The only method that a practitioner has of recognising atypical forms of disease is to know the whole of medicine thoroughly, and a book which sets out to describe only the less common forms which disease may take cannot be of much assistance to him.

Lehrbuch der Differentialdiagnose innerer Krankheiten. Second edition. Von Professor Dr. M. MATTHES, Direktor der Medizinischen Universitäts-Klinik in Königsberg. Berlin: Julius Springer. 1921. With 106 plates. Pp. 621. M.68.

THIS book is written for recently qualified practitioners with the object of providing a bird's-eye view of differential diagnosis. The subject is arranged in sections. The first two deal with fevers, and one or more are allotted to diseases of the respiratory, circulatory, alimentary, and renal systems; diseases of the spleen, liver and gall-bladder, blood, joints, and bones are dealt with in separate sections. Apart from the differential diagnosis of meningitis and meningism and of neuralgia the central nervous system is not included, being reserved for a separate volume. The book is written from a strictly clinical standpoint, and the author makes his attitude clear in the statement that a man's clinical experience may be judged by the history he takes of his patients' cases. The several sections are similarly dealt with on the following lines; thus in disease of the alimentary tract the disorders of this system that complicate disease elsewhere are referred to; a discussion of the major symptoms of gastro-intestinal disorders follows; and lastly the differential diagnosis of clinically recognised complaints is dealt with. Methods of clinical investigation are discussed and reviewed, and here the author sometimes passes beyond the limits of ordinary clinical practice, and includes methods that are only possible in the hands of experts in an institution where the necessary facilities are provided. In certain directions purely academic problems are considered at length; for instance, much information on the classification of the several forms of nephritis has been collected, but a want of discriminative criticism mars the value of this part of these sections. German authors are frequently mentioned, but no references are given, and though a few American and English workers are named it is evident that the author is not familiar with their writings.

The value of Professor Matthes's book to those for whom it is actually intended lies in the simultaneous discussion of a subject from the point of view of symptoms, clinical syndromes, and methods of clinical examination; there is a good index guiding the reader quickly to the desired context. But it is likely to prove of most interest to those who are engaged not in the practice alone but also in the teaching of medicine.

NOTES ON MIDWIFERY.

Second edition. By J. M. MUNRO KERR, M.D., and JAMES HENDRY, M.A., B.Sc., M.B. Glasgow: Maclehose, Jackson, and Co. 1920. Illustrated. Pp. 156. 10*s*. 6*d*.

THIS book consists of a synopsis of notes of lectures delivered at Anderson's College Medical School. It is interleaved so that the notes may be amplified and added to by the student. Necessarily short and somewhat compressed, it yet forms a sound basis for the student to ground his reading upon and a ready reminder to the teacher of the main heads of the subject. Dr. Munro Kerr's authority gives the book a considerable value, and we need hardly add that the teaching is thoroughly practical and sound. If used as it is intended, the book should prove of value to the student, both in giving the main outlines of the subject in a clear form and in enabling him to revise and coördinate his knowledge from the point of view of examinations.

THE PRACTICE OF MEDICINE.

Fourteenth Edition. By Professor JAMES M. ANDERS, M.D., Ph.D., LL.D., with the assistance of Dr. JOHN H. MUSSER, Jun., B.S., M.D. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 1284. 45*s*.

NEW editions have followed each other in quick succession since the original publication in 1897 of this text-book, and in bringing out this, the fourteenth edition, Professor Anders has had the assistance of Dr. J. H. Musser. The subject-matter is brought well up to date and contains several entirely new sections; those describing bronchial spirochætosis, trench nephritis, disordered action of the heart, epidemic encephalitis, and botulism deserve mention, while the references to the estimation of basal metabolism in exophthalmic goitre and to splenectomy in pernicious anæmia afford further evidence that recent advances have not been ignored. The article on focal sepsis is suggestive, and new and important points are considered in the sections on pneumonia, pellagra, scurvy, hæmolytic jaundice, Banti's disease, and asthma. The methods of examination of the efficiency of the stomach, intestines, and kidneys are discussed, and in view of the increasing need in accurate diagnosis of these clinico-pathologic aspects of investigation we hope that sufficient advance will have been made to justify a separate description of hepatic and pancreatic function tests in the next edition. With regard to renal function tests reference might have been made to globulinuria in functional proteinuria and to the diastase test. Professor Anders has succeeded in maintaining the position of his work as a first-class standard book of reference in practical medicine, and the reader will find in it the assistance he requires for the detailed study and diagnosis of disease.

MAN'S DESCENT FROM THE GODS.

The Complete Case against Prohibition. By ANTHONY M. LUDOVICI. London: William Heinemann. 1921. Pp. 254. 14s.

THIS is a most amusing book; it contains a good deal of sound sense, and also, we must add, a good deal of nonsense. The author holds that the myth of Prometheus is a tradition of an actual event in the history of the ancestors of the ancient Greeks. These ancestors (who were the gods of the ancient Greeks) were probably the Cro-Magnon race; they were acquainted with fire and its uses, but it was only used under certain restrictions. Prometheus obtained the secret of making fire and demonstrated it to the inferior races—i.e., the men with whom the gods mingled. Hence arose all the appalling consequences due to the cooking of food, and not until Dionysus the Saviour arose with his fermented liquors were these deleterious consequences checked. Prometheus versus Dionysus is thus the theme of the book. Now, putting aside the fancifulness of this thesis, it is perfectly true that cooking certain kinds of food does damage their value, and thrice-cooked food may be worse than once-cooked food. It is also true that liquors prepared from fermented and germinated cereals have an antiscorbutic property—a property which is found in old-fashioned ale and to a less extent in modern beers. But cooking has its virtues, and even Mr. Ludovici agrees that meat should be cooked—that is to say, lightly roasted or grilled; it is cheering to think that the immortal essay on Roast Pig is still to be a watchword for epicures—

> "There is no flavour comparable, I will contend, to that of the crisp, tawny, well-watched, not over-roasted *crackling*, as it is well called—the very teeth are invited to their share of the pleasure at this banquet in overcoming the coy brittle resistance. ....."

Ale, too; as we read Mr. Ludovici's praise of ale we seem transported to the age of good Bishop Still, who wrote that feeling passage—

> "I cannot eat but little meat
> My stomach is not good,
> But I do think that I can drink
> With any that wears a hood;
> Back and side go bare, go bare,
> Both hand and foot go cold,
> But belly, God send thee good ale enough
> Whether it be new or old."

So far we can go with Mr. Ludovici, and we also agree with his strictures upon some of the evils of industrialism, which came to their zenith in the first half of the last century. But his chapter on Eve and Pandora is a mistake. If some women are fools, have no taste, and have a lust for petty power, the same things may be said of some men. If some women mate with undesirable men, so also do some men mate with undesirable women, but to say, in Mr. Ludovici's words, that woman "becomes associated with a decent man only by accident" is silly.

QUAKER ASPECTS OF TRUTH.

By E. VIPONT BROWN, M.D. Lond. London: The Swarthmore Press. Pp. 156. 5s.

THIS book consists of a series of addresses designed to show the superiority of the Quaker system of religion over other systems of Christianity. With the author's contention that all forms of orthodox Christianity have departed from the principles of primitive Christianity, or, at least, do not carry them out, we can agree, but we should say that even the Quakers do not carry out primitive Christianity in its entirety. It is no business of ours to decide for or against Quakerism as opposed to other forms of religion, but we must point out one or two places where Dr. Brown is inaccurate. For nstance, in his chapter upon Christianity and War he insists upon saying that "during the first two centuries of our era Christians consistently refused to carry arms." Some Christians undoubtedly did, and that because their religion forbade them to kill. But the chief reason why Christians refused to serve was on account of the impossibility of so doing without recognising, or seeming to recognise, the divinity of the heathen gods. All the same, there were many Christians in the army, as such stories as that of The Thundering Legion, under Marcus Aurelius, circa A.D. 169, and the martyrdom of the Thebæan Legion, at the order of Maximian, A.D. 285, show. We say nothing for the truth or otherwise of the story of the miraculous thunderstorm, or of the martyrdom, but the mere fact of the existence of the legends shows that Christianity in the army was quite common. Again, on p. 60 Dr. Brown is arguing as to the uselessness of creeds, confessions of belief, and so on, and in mentioning other denominations, says of creeds, "When these have been understood and believed and accepted as true, then salvation is assured; the end of religion has been attained." This statement is simply not correct.

JOURNALS.

Brain. Vol. XLIII., Part IV.—Left-handedness and Mirror-writing, especially among Defective Children, by Hugh Gordon. A record of tests carried out on children in "special schools" in London and Middlesex. The tests described were found to be those giving the most consistent results. It was found that whereas in the ordinary elementary schools the percentage of left-handedness was 7·3, in the special schools it was 18·2. In those schools defects of speech occur more frequently in left-handed than right-handed children. In the case of twins, when one is left-handed and the other right-handed, the former is frequently backward or even in a "special" school, the latter normal. Among normal children the left-handed are frequently the most efficient and capable; among the mental defectives it is exactly the reverse. The percentage of mirror-writers is much higher in special schools and in them among the left-handed (30 per cent.) than the right-handed (2·2). The percentage of mirror-writers among left-handed children who write with the right hand is found to be: boys, 32 per cent.; girls, 62 per cent. Many other interesting observations on mirror-writing are given, and the author suggests, as the only possible hypothesis at present, that in these children "something has occurred which has interfered with the proper functioning of the dominant hemisphere."—Tonus and the Reflexes, by J. K. A. Wertheim Salomonson. A description of a part of the author's investigations by means of Einthoven's string galvanometer of the nature of muscular contraction. Three groups of contractions can be differentiated: (1) the simple muscle twitch, characterised by its short duration and by its being preceded by a double-phase action current; (2) those characterised by a current of action in the form of a rather irregular alternating current with a frequency of about 50 periods per second—e.g., all voluntary contractions, epileptic convulsions, and all cutaneous reflexes; (3) all kinds of muscular action in which no electric current of action can be detected—all changes in muscle tone occur in this way, as also all spasms of spastic muscles. The method applied to the reflexes shows that these are much more complicated than is generally supposed to be the case. The complication arises from the fact that every simple or tetanic reflex is in itself the cause of a secondary tonic reflex, and most are governed by more than one centre. The simple twitch of the knee-jerk is often succeeded by a tonic contraction, which the author holds is conditioned by a reflex path through the sympathetic and Boeke's fibres. In addition, the varieties of knee-jerk seen in chorea and in Westphal's "pseudo-knee-jerk" can only be explained by assuming the existence of a third cerebral centre. The cutaneous reflexes have two centres, one spinal, the other cerebral. In man the latter is much the more important. The plantar response is fully considered; toe-extension is the primary, protective, spinal reflex; toe-flexion is a late developed, cerebral reflex, needed for standing and walking, which in the adult supplants the former. When the pyramidal tract is affected, not only is the cerebral centre put out of action, with consequent reappearance of the toe-extension (spinal) reflex, but the irritability of the spinal centre governing the secondary tonus reflex is increased which produces ample extension of the toe.—Aphasia: An Historical Review (the Hughlings Jackson Lecture for 1920), by Henry Head. The first serious contribution to our knowledge was furnished by Gall at the beginning of the nineteenth century; he localised six forms of memory in separate "organs" or "centres" in the frontal lobes. In 1861 Broca published the case which was to become classical; he divided central affections of speech into the two groups "aphemia" and "verbal amnesia," and localised the lesion causing the former in the third frontal convolution. In 1864 Hughlings Jackson published his first paper. The basis

of his treatment of the subject was that it is the power to form propositions that is affected, and not the memory of words or faculty of language; the higher the propositional value of the task the patient is asked to carry out the less he will be able to respond. The teaching of Jackson remained without fruit, first, owing to the profundity of its thought; and secondly, owing to the rise of a succession of brilliant dogmatists, led by Bastian, who propounded schemes and diagrams which gave apparently simple explanations of the phenomena. Recognition of the fact that it was only by twisting of the clinical findings that a case could be fitted into any particular scheme resulted in the publication in 1906 by Pierre Marie of his "Revision of the Question of Aphasia." He maintains that the aphasia of Broca was a combination of two distinct troubles, anarthria and aphasia, the former being simply inability or difficulty of articulating words without any defect of internal language, the latter corresponding to the "sensory aphasia" of Wernicke, which term should disappear. There followed the great discussion at Paris in June, 1908, which resolved itself mainly into a verbal battle without any real advance. Having closely studied the writings of Jackson, devised a new method of examination, and applied it to a large number of cases, Head propounds a new classification of these "disorders of symbolic thinking and expression," claiming that the observed facts show disturbance of these higher psychological processes and not of particular physiological functions subserving speech. The diagram makers worked on the assumption that we think in words; Jackson and Head maintain that we think in symbols, ranging from simple matching of two sensory patterns to recognition of abstract propositions.—The number closes with a discussion on Aphasia at the Royal Society of Medicine, in which Dr. J. Collier, Sir James Purves Stewart, Dr. Kinnier Wilson, Mr. Herbert Parsons, Dr. Stanley Barnes, and Dr. Head took part.

IN the *Military Surgeon* for March Lieutenant-Colonel E. E. Irons, Medical Corps, U.S. Army, discusses in a long and valuable paper the pneumonia which, in the last four months of 1918, followed influenza in the camps in the United States. There were more than 365,000 cases of influenza, and some 20,000 deaths. The case mortality of this pneumonia varied between 6 and 11 per cent. In one camp of 35,000 men the mortality during seven weeks was 3 per cent. of the total force. Influenza, also the complicating pneumonia, attacked more heavily the recruits and men from country districts. To struggle against the disease, or to attempt to carry on in spite of it, was dangerous. Hence non-commissioned officers and regular army nurses had a high mortality. On the other hand, there was little pneumonia amongst patients already in hospital who were attacked with influenza. The essential pathological condition produced in the lung by influenza was an enormous œdema with little consolidation, and many hæmorrhages due to necrosis of the interalveolar capillaries. No bacillus was at this stage recognised, but influenza lowered resistance and gave opportunity to the infections already in the naso-pharynx to develop, and so set up pneumonia. The microbic character of the pneumonia varied from camp to camp and period to period. Colonel Irons describes the morbid anatomy of the pneumonia, differing as it was due to pneumococcus, streptococcus, Pfeiffer, or staphylococcus. Tuberculosis as a sequel was rare. The best treatment proved to be early rest in bed, good nursing, and the prevention of complicating infection. No routine treatment could be advised. Convalescence was prolonged. Convalescents got double rations, and being still hungry were given bacon and beans additional. They were put through graduated exercises, beginning with a short five-minute walk twice a day, and went on to games and hard work. Care was taken that they were not discharged too soon, for their resistant powers had been severely taxed. A paper by Captain Ivy A. Pelzman discusses the high venereal rate of the U.S. Army in China. Of 100 men, 89 risk infection and 23 get it. Why? Prophylactic treatment in Tientsin is a long way from the centre of the town, and it is therefore proposed that tolerated houses be established on the U.S. Concession. The women would be kept clean, and prophylactic measures would be close at hand for the men, and there would be a lower venereal rate.—There is a most entertaining article, Doctors in Uniform, by Dr. H. W. Dana, of Boston, Massachusetts, giving account of the experiences and training of civil practitioners called up for the war. He tells of the difficulty there was in getting special chances of leave and the excuses that were not accepted. "Grandmothers' funerals did not go," he says. One doctor who arrived with a black umbrella was induced to travel three miles to exchange it with a quartermaster for another in a regulation khaki shade. The drill was beneficial, the discipline was improving, and the post-graduate special courses were wonderful. One candidate for a commission asked to mention intestinal parasites could only mention two—typhoid and paratyphoid. Dr. Dana is certain that no man who went to the Medical Officers' Training Camp left camp without getting vast benefit physically and professionally. Many officers have apparently been writing at Christmas from the United States to Sir John Goodwin, the Director-General of the Army Medical Service, and he has sent them a letter of thanks addressed to Surgeon-General M. W. Ireland, at Washington, recalling how generously their service supported us in 1917, and how much the support and help of those 1000 medical officers and 700 nurses meant to our armies.

New Inventions.

A URETHRAL AND SINUS DRAINAGE BOUGIE.

BEING interested in the treatment of gonorrhœa as practised by the Australian medical officers at Codford Camp I have had made for me a drainage bougie with a view of improving the technique. It is simply a tubular mesh of white silk closed at one end (see figure) through the centre of which runs a thin vegetable fibre. Its length is about 8 inches, the central core being several inches longer and its flexibility allows easy insertion into the urethra or sinus. Its mode of application is painless. The urethra being cleared by urination a sterilised urethroscope tube with the pilot is inserted; the pilot is then withdrawn and the drainage bougie saturated with any desired solution, such as permanganate of potash, protargol, acriflavine, and so forth, is introduced. The urethroscopic

tube is now withdrawn leaving the drain in situ. Finally, the central core is pulled out, leaving the drainage-tube in the urethra. The drain gives no discomfort and is well tolerated. The advantage of this form of treatment is that all parts of the mucous lining come into contact with the antiseptic employed and there is no risk, as in syringing, of driving the pus into the posterior urethra, which I believe is a common cause of cystitis, prostatitis, and orchitis. I can conceive no more rational treatment of gonorrhœa than by the employment of this method. I have treated several cases with excellent results, but the number is too small for statistical purposes. I am having a glass endoscopic tube made for introducing the drainage-tube which could be used by the patient. This method might also be employed for the drainage of small sinuses, fistulæ, and for other purposes.

The silk bougies have been made for me by the Aurorascope Co., Ltd., Fulwood House, Fulwood-place, Holborn, W.C.

HENRY DUTCH,
Berkeley-street, W. M.D., M.R.C.S., L.R.C.P.Lond.

A TUBE FOR BLADDER DRAINAGE.

IT has always appeared to me that the methods of bladder drainage commonly employed after cystotomy are a reproach to surgery, and that if the care exercised in the modern theatre was extended to the obtaining of a water-tight and aseptic bladder the results of vesical surgery would be much improved. The usual method of placing a stout tube in the bladder and sewing the incision around it permits the bladder to retract into the pelvis, and invariably allows leakage around the sides of the tube, and contamination of the prevesical space. In some cases the tube presses painfully on the trigone and tenesmus results. In a few, I imagine, the bladder withdraws itself over the end of the tube; in any case prevesical infection is common and ammoniacal decomposition and deposit of phosphates occur in a large proportion of cases.

A French Method.

In search for improved methods I came first on a procedure used by French surgeons. A de Pezzer catheter of large size (say, 32 French) is introduced into the upper angle of the wound and the remainder carefully sewn up so as to allow of no leakage. A purse-string suture is placed around the tube to keep the bladder wall in constant apposition with it. The expanded end of the tube is drawn up so as to sit firmly against the mucous membrane around the margin of the bladder incision. Two fine catgut sutures, one above and one below the tube, hold the bladder up against the rectus muscle. In this way I found that I got a perfectly water-tight joint, not a drop of urine escaping into the wound, and that union per primam was invariable. Yet the method seemed to me to present three grave defects. In the first place, drainage was good enough in uncomplicated cases; yet wherever post-operative bleeding might occur, as for instance after prostatectomy, I could foresee grave risk of a clot obstructing the small eyes of the catheter, and a dangerous clot-retention occurring. In the second place, irrigation could only be performed by means of the tedious and meddlesome method of syphonage, which is intermittent, inefficient, and disturbs the patient, besides alternately distending and collapsing the bladder and so tending to produce leakage. Thirdly, it is the topmost point of the bladder which is drained.

Modification of the de Pezzer Method.

To obviate these three faults I have had a tube prepared for me by Messrs. Allen and Hanburys (Fig. 1). It is a de Pezzer catheter, in which the end has been altered into a flange as shown in Fig. 1. This flange is curved slightly backwards towards the tube, so that when drawn up into position in the bladder wound there is a degree of elastic tension which makes a secure joint. The size of the exit provided by this tube is sufficient to preclude any likelihood of a clot obstructing it. Vulcanised against the side of the larger tube is a smaller one, which passes through the flange; when in position, this projects into the bladder base, its external end is connected to a reservoir of lotion, through which constant irrigation of the bladder is effected, the flow leading into the bladder at its lowest point. There is thus a constant flow of fluid through the bladder, and no stagnation can occur in the bladder sump.

FIG. 1.—The bladder drainage and irrigation tube. Total length 16 inches, diameter nearly ½ inch. The flange appears more solid than it actually is, and its backward curve is better seen in Fig. 2.

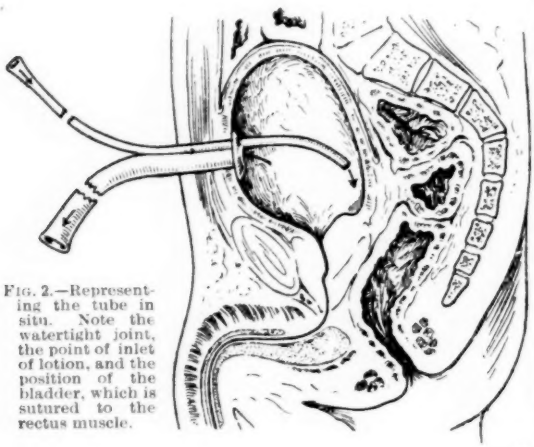


FIG. 2.—Representing the tube in situ. Note the watertight joint, the point of inlet of lotion, and the position of the bladder, which is sutured to the rectus muscle.

Details of Method.

By this method I have been successful in obtaining a perfectly dry wound in practically every case, the first dressing being allowed to remain in position until the tube is removed. I allow the tube to stay in for upwards of a week, considering that it is a valuable asset to have healing well advanced and the prevesical space firmly shut off before taking it out; after that the urine in drained into a Hamilton Irving suprapubic dish. Simple traction serves for the withdrawal of the tube, the intravesical flange crumpling up and passing through the wound without any difficulty. I do not know how long the bladder remains adherent to the abdominal wall, but certainly not for any long period. In all cases I have found that it functions perfectly when the suprapubic wound is healed. I have also proved that the upper wall of the bladder descends properly by observing it as it empties itself through an irrigating cystoscope.

In order to make sure that the bladder is not held in position for too long my stay sutures are of medium or fine ten-day catgut. Another, and perhaps a better, method is to use two sutures of silkworm-gut, which are passed right through the abdominal wall and support the bladder, pretty much in the same way as tension sutures are used to support the sheath of the rectus after a laparotomy; these are removed when the bladder-tube is withdrawn.

The tube should be placed in the upper angle of the bladder wound and should emerge about the middle of the skin incision. If it is placed too near the pubes there is a danger of adhesion occurring between the bladder wall and the os pubis, and formation of a fistula. An excellent reservoir for lotion is a thermos flask fitted with a Souttar's syphon, and suspended above the patient's bed. A flask of two quarts capacity can be obtained. The speed of the flow can be regulated by a cock on the syphon. It is a good plan to run the fluid alternately fast and slow, as when it is running fast it creates a disturbance in the bladder sump and cleanses it efficiently.

As regards the lotion to be used, I think that boric acid (sat. sol.) or oxy-cyanide of mercury (1–6000) is the most generally useful, but medication of the bladder can be applied with ease to suit varying circumstances; for instance, in the case of hæmorrhage, adrenalin or silver nitrate can be used; in the case of pain, phenacetin, novocaine, or stovain. It is generally well to keep the bladder fairly acid, and the addition of some acid sodium phosphate to the lotion can be recommended.

The temperature of the lotion in the thermos must be higher than that at which it is desired it should be when it reaches the bladder, as about 4° to 8° F. will be lost in passing down the tube according to the speed at which it is running. I find that patients experience comfort from this irrigation, especially if the lotion reaches the bladder at about 100° F. and when the flow is fairly quick.

I have treated this subject from the point of view of surgical cleanliness and the avoidance of leakage and of phosphatic deposit in the wound; but there is another aspect of the question which is probably of equal importance, and which I consider does not receive the attention which it deserves. A considerable proportion of cystotomy cases, especially among elderly prostatics, are on the verge of uræmia, which the operation accelerates or precipitates, not infrequently with a fatal issue. It seems to me reasonable to believe that a considerable share is played in this mortality by the absorption of toxic urinary bodies from the prevesical space. It is well known that if urine is injected into healthy rabbits a lethal dose is soon reached. How much more shall a dose prove lethal to a patient whose blood urea has already reached the danger zone, when urine is extravasated into the prevesical space—that excellent absorption area—especially when the effects of the operation are superadded? I hope to return to this subject. In the meantime I refer to it in order to emphasise the importance of a dry cystotomy wound.

JAS. B. MACALPINE, F.R.C.S.,
Honorary Surgeon and Surgeon-in-Charge of Genito-Urinary Department, Salford Royal Hospital, &c.

LITERARY INTELLIGENCE.—Messrs. Kegan Paul and Co. announce the decision to enlarge the scope of *The Psychic Research Quarterly* and to transform it into a general review of applied and general psychology under the title of *Psyche*. Education, psycho-analysis, industry, religion, social and personal relationships, psychical research, &c., will come within the scope of the new series, the first number of which will appear on July 15th.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS. AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE A LA FACULTÉ DE PARIS.

METHODS OF HYSTERECTOMY.

BY E. DOUAY,

CHEF DES TRAVAUX, GYNÆCOLOGICAL DEPARTMENT, HÔPITAL BROCA (PROFESSOR J. L. FAURE).

WHEN the surgeon takes up his bistoury to perform abdominal hysterectomy for fibromyoma of the uterus or salpingo-ovaritis he cannot know beforehand what procedure he will adopt. If the cervix uteri is so affected that ablation appears to be necessary, he will perform total hysterectomy. The cervix uteri can usually be conserved, and its conservation holds more advantages than inconveniences. Subtotal hysterectomy is, in the opinion of J. L. Faure, the routine operation, established by 25 years of gynæcological surgery. Total hysterectomy remains an exceptional operation; in difficult cases it is advantageous first to perform the subtotal operation, and thus, when the pelvis is largely emptied, to remove the cervix, thus converting subtotal into total hysterectomy.

Only after the abdomen is opened, when the lesions are apparent, can the surgeon select his operation; his choice must be made in a few seconds of time and is of capital importance. It must be remembered that personal habit is to be considered; such and such a procedure, excellent under some anatomical conditions, becomes difficult and impracticable under others.

There are several guiding principles of use in assisting a judicious choice.

1. To discover the uterus amidst the lesions which obstruct the false pelvis, the first task is to separate the intestinal and epiploic adhesions and to disengage the fundus uteri; only when this preparatory work is finished can the attack on the utero-adnexal lesions be attacked.

2. To deal with the easier side first, leaving the more septic and more dangerous lesions until last.

3. Removal of the adherent adnexal mass must be done from the inner side and from below. Separation of adhesions at the lateral wall of the pelvis is a difficult and dangerous undertaking if begun from the external side and carried out from above downwards. It is made singularly easier if, after having found the inferior pole of the ovaro-salpingitic mass, the operator works from below upwards.

4. When traction is applied to the uterus, that organ is only held in place by the cervix and its connexions with the vagina. Once the cervix is divided, the uterus may be withdrawn, and the pelvic cavity thus relieved. In difficult cases it is therefore well to perform section of the cervix as soon as possible during the operation.

To sum up—the surgeon should follow the shortest and least obstructed route to reach and perform section upon the cervix uteri in order to deal with the lower pole of the adnexal masses. As this shortest and least obstructed way is not always the same, different procedures are necessary according to circumstances. The whole art of the operator is to know how to adapt his method of attack to the lesions met with, and to employ the procedure most suited to the case in hand.

In easy cases all methods are suitable. H. A. Kelly's operation (Fig. 1), still described as the "American method," is one of those most used; the less affected side is first taken, and after section of the cervix the thick utero-adnexal mass is approached at its lower extremity and separated from below upwards. This is the method of choice for double salpingitis with a large unilateral adnexal mass. In fibromas without salpingitis, or with a slight form of salpingitis, Kelly's method is again preferable. As soon as possible after division of the cervix the uterus is drawn aside, leaving space to secure and cut the second uterine artery and easily to separate the adherent adnexa from below upwards.

Amongst operations suitable for easy cases, that of posterior decollation (J. L. Faure's method) (Fig. 2) is particularly rapid. In this procedure, the uterus is drawn forward and its posterior surface displayed; the isthmic portion of the cervix is severed with curved scissors from behind forwards. The uterus is then raised, the uterine arteries are cut, and the finger is inserted through the breach in the broad ligament to separate the corresponding adnexa. When inflamed adnexa are very adherent to the pelvic wall, but leave the edge of the uterus free, it is useful to perform section of the broad ligament between the adnexa and the uterus: this is Terrier's method—in such a case the most direct way of approach for division of the cervix. The uterus is first raised, and through the breach thus made the adnexal masses are successively dealt with.

In other cases, the adnexa on one side are found to have adhesions in every direction, whilst the other, less voluminous, adhere to the pelvic wall and prevent the use of Kelly's method, but leave between themselves and the uterus sufficient space to admit of performance of the first stage of Terrier's operation. (Fig. 3.) The only available route to the cervix is then employed: the latter is cut and the adnexa on that side raised, together with the uterus, to which they are adherent. This combined Kelly-Terrier's method of operation is concluded by simple ablation of the remaining adnexa.

Turning now to lesions still more pronounced—adnexal masses on both sides, adherent to the pelvic wall and to the uterus, so that it is impossible to pass round or behind them—what is to be done? Faure's method must be followed, and the incision made at the centre of the uterus, the operation of hysterectomy by uterine hemisection. (Fig. 4.) The fundus uteri being recognised and secured by two traction forceps, the uterine cavity is laid open by an exactly median incision with scissors, section being prolonged to the isthmus. The first half of the cervix is transversely divided, the uterine artery being secured and the adnexa separated according to routine; the other half of the uterus is then removed in the same way. For hemisection to be possible, the posterior face of the uterine body must be free or easily liberated. If this face be covered by the adnexal mass and unapproachable—an exceptional state of affairs—anterior decollation still remains to the operator's hand. (Fig. 5.)

It is very seldom that the vesico-uterine peritoneal cul-de-sac is not free; when free it permits sight of the isthmic portion of the cervix, which is cut by the scissors from before backwards, division being performed in sight. Division of the cervix completed, the way to the base of the broad ligaments lies open, and after section of the uterine arteries separation of the adnexal masses may be proceeded with.

In certain exceptionally difficult cases, the uterus is fixed in retroversion and retroflexion in the midst of the adherent masses. In order to disengage the organ, anterior decollation (Fig. 6) can be employed, and then hemisection (from below upwards) of the cervix already transversely divided towards the fundus uteri. By following round the uterine cavity the operator retains an excellent guide, permitting enlargement of

DIAGRAMS ILLUSTRATING VARIOUS METHODS OF HYSTERECTOMY.

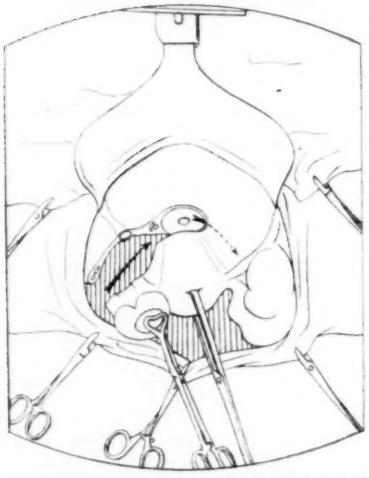


FIG. 1.—H. A. Kelly's method, admitting of approach, from behind and below, the most adherent form of adnexitis, thereby facilitating its decollation.

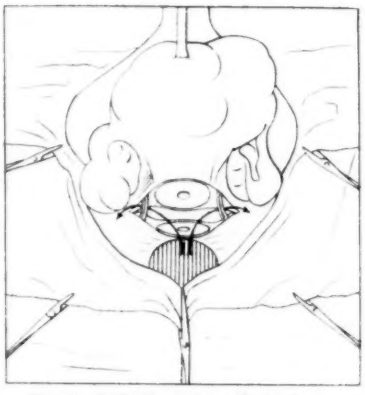


FIG. 2.—J. L. Faure's method of posterior decollation. When the cervix uteri is dissected the uterus can be removed and access gained to the adnexal mass.

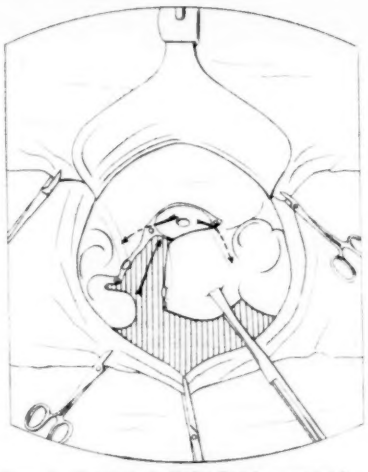


FIG. 3.—Combined Kelly-Terrier method. The cervix is reached through the space between the left adnexa and the uterus. After section it becomes possible to approach from below the right adnexa, presumably very adherent in all directions. The operation is terminated by separate removal of the left adnexa.

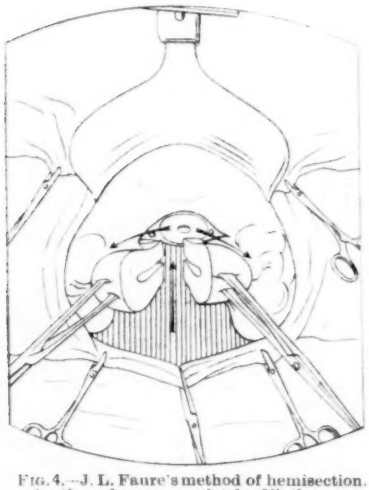


FIG. 4.—J. L. Faure's method of hemisection. As the adnexa completely fill the space between uterus and pelvic wall, median section of the uterus allows the cervix to be reached and dissected in order to approach the adnexa in turn.

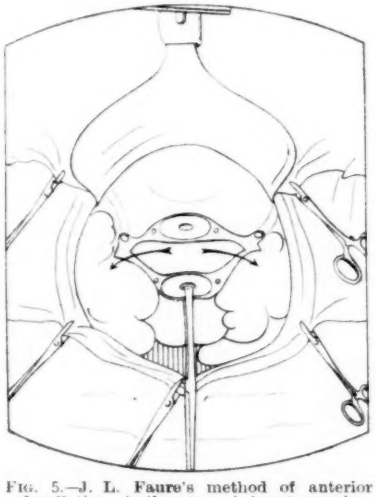


FIG. 5.—J. L. Faure's method of anterior decollation. As the uterus is in retroversion, the fundus being completely masked by adherent adnexal masses, the first section of the cervix permits recognition and compression of the uterine arteries, and then approach to the adnexa from below.

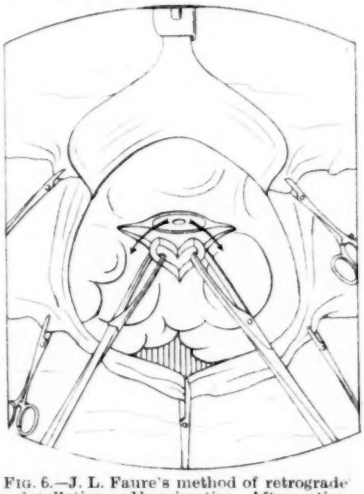


FIG. 6.—J. L. Faure's method of retrograde decollation and hemisection. After section of the cervix the uterus cannot be separated from the pouch of Douglas; hemisection, following the uterine cavity, is without danger and facilitates liberation of uterus and adnexa.

the route of approach without any risk. This method is described as anterior decollation with retrograde hemisection.

Lastly, there is the condition where the positions of lesions are supremely inconvenient for the operator—fibromyoma of the uterus, blocked in the pelvic cavity by a double salpingitis adherent in all directions. In this case, hemisection cannot be performed; anterior decollation is also impossible because the cervix uteri is not approachable from in front—between the fibroma and the bladder (crowded against the os pubis) there is not room to use the scissors. Évidement by morcellation must be performed, and as the fibromatous masses are removed, the pelvis will become less congested. The region of the cervix uteri is finally reached, and the operation is concluded as in hysterectomy by hemisection. This method of évidement is that of Professor P. Bégouin of Bordeaux.

SUBTOTAL HYSTERECTOMY:

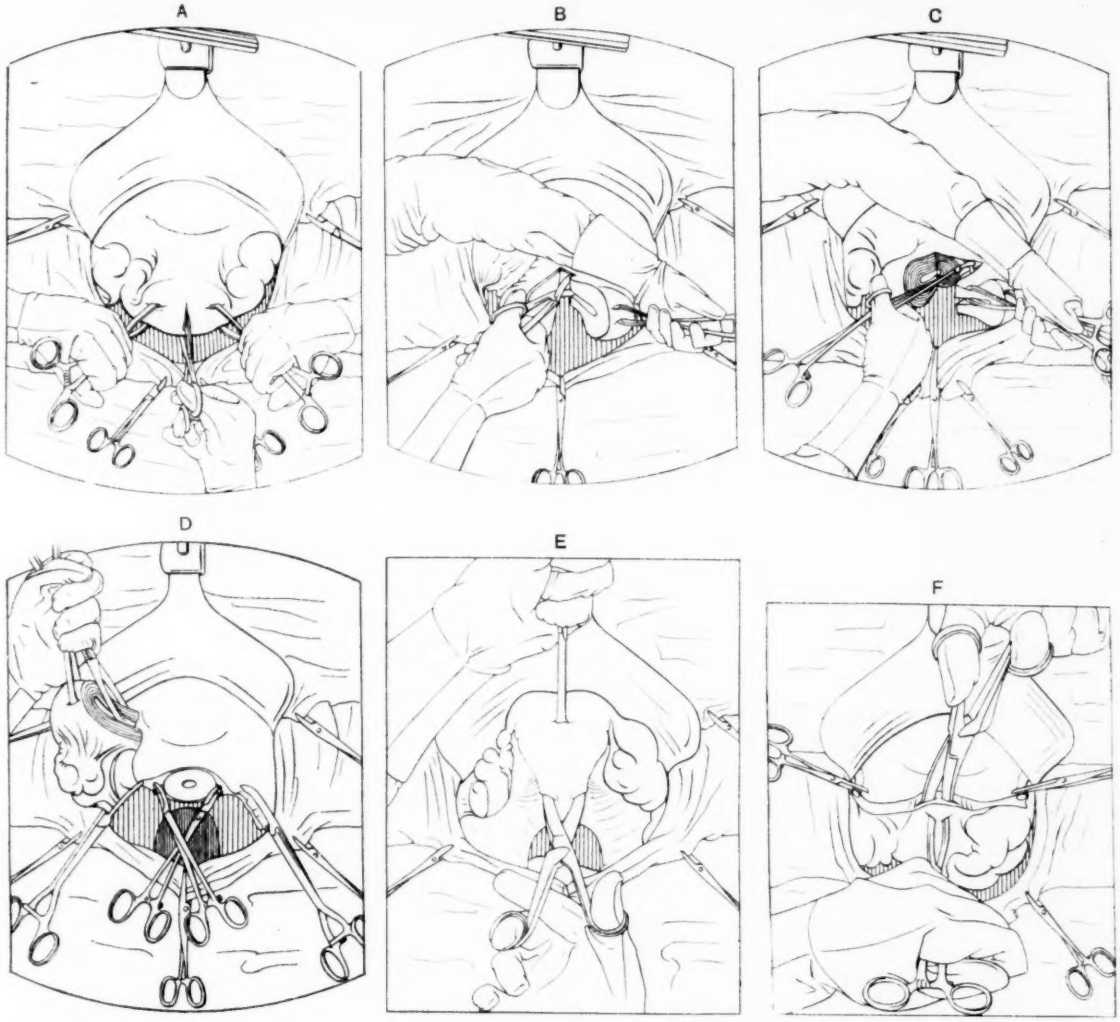
FAURE'S OPERATIONS OF HEMISECTION AND DECOLLATION.

BY E. DOUAY.

1. *Hysterectomy by Hemisection.*

HEMISECTION is the most remarkable of the less common operations of hysterectomy. It was performed for the first time by J. L. Faure in September, 1897, and is now practised throughout the world; there are even surgeons who wish to extend its indication to all cases of hysterectomy for double salpingitis, but it must remain an exceptional procedure, of considerable value in exceptional cases. The operation is indicated chiefly in bilateral salpingitis, with double adhesions to the pelvic wall on one side and to

DIAGRAMS ILLUSTRATING SIX STAGES IN THE OPERATION OF SUBTOTAL HYSTERECTOMY.



the uterus on the other. It is also indicated in certain adnexal tumours which fill the pelvis. Such cases are not rare; in salpingitis, for example, they are found in about one case out of every four. According to the statistics of the Hôpital Broca, hemisection has been performed in 24 per cent. of hysterectomies for salpingitis.

The procedure admits of following a method—sure, easy, and without danger—of section of the cervix uteri, ligature of the uterine arteries, and decollation of the adnexa. The uterine cavity is opened with the first cut and serves as a mark by which to continue median section to the isthmus; it is impossible to follow a false route, and division, if performed strictly in the median line, cannot involve any important artery (Fig. A). With regard to the possible disadvantages of opening the uterine cavity, danger of infection by the uterine mucus is not usually to be feared. Even in suppurating salpingitis, the uterine mucus is generally healthy and practically aseptic. In every case, however, it is well to thermocauterise the cavity as soon as the latter is opened, on condition that this cauterisation is done carefully and without hurry.

To perform hemisection, the necessary and sufficient condition is to locate the fundus uteri, which is not always easy amidst the adhesions which form obstructions in the pelvis. Two fixation forceps are placed symmetrically on the fundus uteri, leaving the middle of the organ free. The uterine cavity is then opened with scissors, and through the opening the large blade of the thermocautery is introduced several times, as far as the guard will allow it to penetrate. Median section is then prolonged to the isthmus.

The easier side—i.e., the side on which the adnexal lesions appear to be less extensive—is selected; before attacking (transversely, with curved scissors) one of the two halves of the cervix uteri, it is vitally necessary to grip the isthmus with traction forceps, as shown in Fig. B; this permits balance from outside, on the external side, of the hemi-uterus after section of the cervix, and also permits sight of the uterine artery, which must be compressed with forceps (Fig. C).

After section of the uterine artery, decollation of the adnexa begins; a finger is placed at the root of the broad ligament to separate the adnexum at its lower pole, whilst traction applied to the uterus is transmitted by the adhesions to the adnexal mass. It is sometimes useful to prolong the incision of the vesico-uterine peritoneum as far as the round ligament, as this facilitates separation of the anterior part of the adnexal mass.

The mass once freed, a clamp is fixed upon the utero-ovarian pedicle, division of which completes the first half of the operation. The other and more affected half is then proceeded with; the latter operation is performed more easily, since half of the pelvis is already freed (Fig. D).

2. *Hysterectomy by Decollation.*

J. L. Faure first performed this operation in 1900. In the same year, he gave an account of the technique and explained the different indications for each variety—posterior decollation for easy cases, anterior decollation for very difficult cases.

Posterior decollation.—If posterior decollation were to be reserved for easy cases, and considered as a rapid and dexterous procedure, it is probable that its technique would have fallen into disuse; but there are rare cases in which this method can be of great use beyond all question of technical skill—cases of fibroma of the uterine body with double salpingitis not involving the pouch of Douglas. The uterus and its fibroma are drawn towards the os pubis in order to disengage the posterior sac (Fig. E). Division of the cervix uteri, at the level of the isthmus, is carried out with one movement of powerful curved scissors. Section at this level does not endanger the bladder or the ureters. When the cervix is cut, the fibroma can be drawn away a few centimetres, thus disengaging the superior attachment. The uterine arteries are sometimes so close to the cervix that it is impossible to avoid dividing them at the same time, but it is easy immediately to compress them. Sometimes they lie more externally and remain intact on either side of the divided cervix. They are easily compressed and cut. Sometimes, however, they stretch and tear, and if bleeding they should immediately be secured; at other times, they are prevented from bleeding by having been stretched before tearing; in that case, their ligature can be left till the end of the operation.

Through the breach created by the separation of surfaces on division of the cervix, the finger can easily be introduced and the vesico-uterine peritoneum broken open. It then only remains to raise the adnexa and compress the utero-ovarian pedicle and the round ligament, section of which terminates the operation.

The total duration of this operation (including incision of the abdominal wall), as performed by Professor Faure, does not exceed from three to five minutes.

Anterior decollation.—This operation has not the same indications as posterior decollation, being reserved for very difficult cases, such as double adnexitis with many adhesions in all directions, and filling of Douglas's pouch. The posterior face of the uterus is not free, which hinders hemisection, but the vesico-uterine cul-de-sac is accessible after liberation of the epiploical or intestinal adhesions, if such liberation is necessary.

The cervix, being seen and found with the finger at the bottom of the cul-de-sac, is gripped transversely, at the level of the isthmus, with strong forceps; when thus rigidly fixed it is dissected transversely beneath the point where it is held, as shown in Fig. F. This dissection is made carefully by short cuts from in front backwards; during this procedure the cut edge of the cervical cavity is seen; the cutting is continued until the cervix is completely divided, but is not carried too far backwards for fear of involving the rectum, which, however, is generally separated from the cervix by the adnexal mass filling the pouch of Douglas.

The cervix uteri once dissected, the arteries appear on each side; if they are not seen, it is known where to look for them, this fact being one of the great advantages of the procedure. The ovaries having been cut, the finger may be admitted by the breach thus made in order to separate the posterior surface of the uterus and reach the adnexa by their bases. The operation may then be concluded without difficulty. It is advisable, after division of the cervix, to prolong the incision of the peritoneum on the sides as far as the round ligaments, which are compressed and cut. This procedure admits more readily of access to the adnexal masses.

ENDOWMENT OF MOTHERHOOD IN FRANCE.

(FROM AN OCCASIONAL CORRESPONDENT.)

THOSE Socialist Members of the French Parliament who refuse to follow the somewhat extensive movement in favour of Bolshevism are now specially concerned in schemes which they consider will promote the material welfare of the masses. They are urging extensions of the laws on compulsory insurance against sickness, accidents, old age, and we are even promised something that seems very like the endowment of motherhood. Indeed, child welfare with the population question holds a very large place in the public mind, for it is not only a public health but also a military problem.

No one has more pertinaciously insisted on the population problem than the former anti-nationalist, revolutionist, the creator of *La Guerre Sociale*, Gustave Hervé. He strove hard to persuade nations, but especially the French and the Germans, to meet a declaration of war by a general strike and to throw down their arms. When, however, he found that the Germans, in spite of their talk of internationalism, would fight to a man, Gustave Hervé changed the name of his paper to *La Victoire*, and urged that the first step towards assuring the peace of the world was to give the Germans a good sound thrashing. Having evolved thus far, he soon made the further discovery that, while the population of Germany increased rapidly and that of France remained stationary, Germany ultimately must predominate. Therefore every effort must be made to preserve the life and vitality of the existing population and to encourage its increase. Unfortunately, these efforts to increase the population have not yet met with any success. The first census returns just received show that there has been a decrease in the number of births in 10 out of 12 departments when compared with the census of 1911. Even where there has been an increase this is due to exceptional circumstances—for example, in the Alpes Maritimes, where so many strangers flock to the fashionable winter stations. But it is not only the birth-rate that has decreased; though the population was already almost stationary, the marriage-rate has not increased since the war in anything like the same ratio as in Germany. Thus the German press recently published statistics stating that the number of births in Berlin, which amounted to 40,832 in 1914, fell to 18,178 in 1917, but had risen again to 33,398 in 1920. Even more significant is the fact that the number of marriages had augmented from 38,919 in 1914 to 53,631 in 1920.

It is facts such as these that stimulate the patriotic Socialist to attack the rich dwellers of, for instance, the Champs-Elysées district of Paris, because they have much fewer children than the poor. Also for one child that dies in the Elysées quarter six children die at Ménilmontant. If the children of the poor cannot live it is because they have insufficient air, food, clothes, and warmth. Then l'Abbé Lemire, who represents in Parliament such Socialist tendencies as exist in the Roman Church, proposes the endowment of motherhood. Already the law of July 14th, 1913, grants public relief to numerous families, but the war has rendered necessary a wider measure; so l'Abbé Lemire recently proposed to the Chamber of Deputies that every mother of French nationality, belonging to the working classes, shall be entitled to receive Fr.360 per annum for each child under 16 years who is not working and earning wages. This will prevent children working too early, as well as lessening the burdens of parentage. The proposal was accepted by the Chamber. If French money had retained its normal value, this would be the same as if a law had been approved by the House of Commons endowing every workman's child with an income of £14 a year up to the age of 16. What the Senate has to say to the project has still to be seen. The fact, however, that such a measure has been widely approved in the Lower House is in itself a proof of the acute stage reached by the population problem. This is a large measure which should encourage early marriage among the wage-earners.

THE LANCET.

LONDON: SATURDAY, MAY 7, 1921.

Safe Conduct of Labour.

IN no department of our science and art has preventive medicine produced so small a result in recent years as in midwifery. While it is true that there has been in this country, what is not true for most other countries, some diminution in the percentage of deaths from puerperal sepsis, yet there has been hardly any diminution in the number of deaths from the accidents of childbirth. This is the more striking when we remember that nearly all these deaths in childbirth are due to preventable causes; and that the incidence of septic infection is extremely small in lying-in hospitals, while it is but little less in private practice at the present day than it was 20 or 30 years ago. The cause for this remarkable state of things has been pointed out by various writers, and is to be found mainly in the fact that in ordinary general practice the precautions taken against the occurrence of puerperal infection are largely inadequate, and the measures necessary for the prevention of the accidents of childbirth are often neglected. That cases of puerperal septicæmia of autogenous origin occur from time to time is due to conditions present in the patient's own body at confinement; yet in the great majority of cases the infection is introduced from without, in most instances by those attendant upon the patient.

It has been urged with great propriety that every case of labour should be regarded as of the nature of a surgical operation, and that precautions should be taken as if the patient were undergoing surgical procedure. This is the practice in lying-in hospitals, and the good results are to be seen in the almost complete immunity from puerperal infection that patients confined in these institutions enjoy. At the present day, unhappily, the voice of the obstetrician teaching the doctrine of midwifery as a surgical art "is that of one preaching in the wilderness"; and although most would concede the justice of the argument, few are prepared to carry it to its logical conclusion, and to treat their lying-in cases as they do their patients who are to undergo some surgical operation. Certainly surgical cleansing of the vulva is a difficult procedure, and in ordinary conditions the external genitalia swarm with organisms possessing pathogenic properties. We must admit, further, that most cases of infection owe their origin to the introduction of such organisms into the genital tract as a result of the manipulations carried out in conducting the case, and in many instances infection takes place during vaginal examinations. The danger is naturally increased the more frequently vaginal examinations are made. There is a story current of a well-known obstetric teacher who used to tell his students the best thing a young practitioner could do when called to a case of labour was "to leave his midwifery bag at home and to keep his hands in his pockets," and in this dogmatic assertion there is more than a spice of truth. It would be no exaggeration to say that meddlesome midwifery kills as many patients as it saves. It is appalling to remember that in these days over 3000 women die every year in England and Wales as a result of pregnancy and childbirth, and that the great majority of these deaths are due to preventable causes. Besides this, we must remember that the morbidity of childbirth in private practice amounts to something like 15–20 per cent. of all cases, and that many of these women suffer in after-life from various disabilities due to the mild grades of infection comprised under this term. The prevention of septic infection in childbed can be effected in one of two ways: either by the recognition of the principle that childbirth is really analogous to a surgical operation and requires just as much care to avoid infection, or by not practising those manœuvres which are likely to lead to infection—namely, vaginal examinations or unnecessary interference with the normal course of labour.

The acquisition of a right judgment in deciding whether or no to interfere is mainly dependent upon the proper teaching of the student. The avoidance of vaginal examinations is a simpler matter and more readily attained. Abdominal palpation, combined if necessary with rectal examination, will give practically all the information that can be obtained by vaginal examination, and these two methods have the great merit that they entail no risk of infection. Abdominal palpation is the more important of the two, and sufficient information can be obtained by this method of examination for the safe conduct of the great majority of cases of labour. It requires only the necessary perseverance on the part of the student to familiarise himself with the procedure. By abdominal palpation everything can be determined in an ordinary case of labour except the degree of dilatation of the cervical canal and the presence or absence of prolapse of the cord, and the diagnosis of either of these two conditions can readily be made through the rectum. It should be considered gross neglect on the part of a practitioner, who undertakes to attend a woman in her confinement, if he does not carry out a careful examination of the abdomen four to six weeks before full term, combined in a primipara with a careful pelvimetry, and in all cases with the examination of the urine. The proper teaching of ante-partum examination of the patient is just as important, and in many ways more important, than the proper teaching of the conduct of a labour, and has the great value that the instructed practitioner in many cases may foresee and avoid accidents and complications which would otherwise occur. In our view every student should be well grounded in the proper methods of practising abdominal palpation in cases of pregnancy, and we would lay great stress upon the importance of teaching the use of rectal examinations during labour and the avoidance as far as possible of all intra-vaginal manipulations. The increased impetus which has been given lately to the setting up of ante-natal clinics will, we hope, have some influence in this direction, but much remains to be done, as we think that the importance of conducting cases of labour without any vaginal examinations at all, a procedure which in most cases it is quite easy to carry out, is not sufficiently emphasised by teachers of midwifery either to students or to midwives.

Industrial Morbidity.

THE Society of Industrial Engineers, which held its Spring Convention at Milwaukee last week, discussed Industrial Leadership, the note of the discussion being that men and women do not work for wages alone, nor are elaborate welfare organisations, lunch-rooms, and bonus plans per se sufficient to call forth the best that is in them. The genius of such men as WATT and ARKWRIGHT made Great Britain birth-place of that modern industrialism which has transformed civilised life; with us also a hundred years later, owing to the initiative of FARR and SIMON, public health medicine first saw light. But the close application of public health medicine to industrial life waits yet to be effected. When it is, we may hope for the dawn of greater contentment in the industrial world. Already there are signs, even though as yet no larger than a man's hand, appearing across the sea. Other nations before have copied and often improved upon what we have started. Many writers in this country, especially since the comprehensive reports of GREENHOW 70 years ago, have drawn attention to the effect of industry upon health. For the most part appeal in proof has been made to mortality data, often scanty and imperfect; evidence based on morbidity, which provides more plentiful material, is needed, but has not been forthcoming. While we are waiting the United States are moving, and during the last 18 months, in their public health reports,[1] there have appeared no less than eight publications dealing with the subject. A committee reported upon the need for investigation and upon a standard method of classification of sickness; that adopted is based on the International List of Causes of Death. Next the Public Health Service offered to devise standard forms and analyse in its statistical office records submitted. Then followed the analysis of records for 1919 of a manufacturing company employing 6700 workers. In December, 1920, there appeared an analysis of sickness frequency among industrial employees for the first half of that year, based on figures supplied by sick benefit associations which are coöperating with the Public Health Service. Then came a paper dealing with the diseases among steel workers studied by investigating the records during a two-year period ending May 31st, 1920, of a large employees' sick benefit association. In March of this year the analysis of sickness frequency for 1920 is carried forward for a further three months. Only cases of sickness incapacitating from work for seven days or more are included.

The occurrence of epidemics of influenza abnormally swells the total amount of sickness experienced, but, omitting this unusual feature, certain interesting facts emerge. Among the steel workers at the head of the order of frequency were 313 cases of bronchitis, 212 of rheumatism, 164 of pneumonia, 121 of rupture, 98 of gastritis, 95 of appendicitis, and 92 of infected injuries, after which no one cause provided more than 75 cases. The general frequency of sickness, based upon information received from 27 reporting associations, is stated month by month as the number of cases per 1000 persons per year; here, again, respiratory diseases (including influenza) lead with 243 cases in February, falling to 10 in July; digestive troubles come second with 24 in January and March, falling to 14 in September, general diseases accounted for 18 in January and 7 in September, and nervous diseases for 8·5 in February and 4 in July and August. "When it is considered," to quote the Public Health Reports, "that cases incapacitating for less than one week are not included, the frequency rates seem surprisingly high. Even in September, the month of lowest incidence in the months under review, the annual case rate was 56 per 1000—in February it was 326. This is true in spite of the fact that the members of a large proportion of the associations are selected workers." The almost entire absence of industrial poisonings as a cause of disability is noted. Clearly they do not bulk largely in the field of industrial medicine. Great differences are reported in the case incidence in different associations. "In February the frequency for Association A was 118 per 1000, while for Association B it was 585 per 1000. In July the rate for Association S was 191 per 1000, while Association R in the same city, and having about the same number of members (approximately 1150 in either association), reported only one case occurring in July, making the rate only 10 cases per 1000 per year." The reason of these wide variations awaits further data and information.

We see here the foundations being laid for the science of industrial medicine, a science which cannot fail to throw light on the influences which reduce vitality. We take the opportunity of calling attention now to a conference of medical men associated with industry which is being called on June 2nd by the Industrial Welfare Society.[2] It is intended at this conference to coördinate the individual efforts made by firms in different parts of the country to deal with their own peculiar medical difficulties. This is work which we recommend to the attention of the reconstructed Industrial Fatigue Research Board; no work is more needed, and in no way can they better prove the wisdom of those who have maintained their activities and widened their scope.

[1] Public Health Reports, Government Printing Office, Washington, August 30th, 1918; Oct. 17th, 1919; April 9th, 1920; Sept. 10th, 1920; Nov. 19th, 1920; Dec. 3rd, 1920; Dec. 31st, 1920; March 4th, 1921.

Pruritus Ani.

Pruritus ani, as a distressing and persistent symptom with a varied and often obscure origin, has always been a stumbling-block to the practitioner and a fruitful source of revenue to the vendor of patent ointments. The recent discussion held by the Subsection of Proctology of the Royal Society of Medicine[3] should help to place the pathology of this nerve-racking complaint on a firmer basis. There was general agreement with Mr. J. P. LOCKHART-MUMMERY, who opened the discussion, that in the great majority of cases the irritation is due to a chronic infective dermatitis, and that lesions of the anal canal producing a chronic discharge are the main factors in causation. Warmth, moisture, and organisms held up in puckered folds of skin, with inadequate attention to cleanliness, seem to be the essential factors in a chronic infection of a cutaneous area richly supplied with nerve-endings, a condition which is kept up and aggravated by persistent scratching. It is a noticeable fact in support of this contention that pruritus is far more common among hospital patients than in the well-to-do.

[2] We are asked by the director of this Society, Rev. Robert R. Hyde, to state that he will be glad to hear from any doctors who are definitely and primarily concerned with the medical affairs of industry. The offices of the Industrial Welfare Society are at 51, Palace-street, Westminster, London, S.W.1.

[3] THE LANCET, April 23rd, p. 859.

Although in the majority of cases some lesion of the anal canal will be found, in others a weak sphincter or slight prolapse of the mucosa will explain the discharge. Sir CHARLES GORDON-WATSON called attention to the frequency with which hypertrophy of the anal papillæ, the sense-organs of the rectum, is met with in cases of pruritus, and mentioned that over a period of 18 months in the out-patient department of St. Mark's Hospital he found hypertrophy of the papillæ, with or without other lesions, in 53 out of 86 cases suffering from pruritus. The significance of these observations was confirmed by the excellent results which followed cauterisation of these papillæ. He pointed out that many cases of supposed functional pruritus, with little or no visible dermatitis, can be cured by cauterisation of the papillæ when these are obviously hypertrophied. And in this view Mr. ERNEST MILES, the President of the Section, concurred, attributing papillary hypertrophy to constipation. Evidently the rôle of Morgagni's papillæ has not received the attention it merits. It may be regretted that no pathologist came forward in this discussion to confirm or confute the work of Dr. DWIGHT MURRAY in America, who has made out a strong case for the *Streptococcus fæcalis* as the important agent in the skin infection, and who advocates vaccine therapy. Vaccine therapy for pruritus has not found much favour in this country; it may not have received an adequate trial. Research in this direction is needed. Treatment directed to the cure of the rectal complaint leads to a speedy cure of the dermatitis in the early stages, when the latter is treated on aseptic lines with special attention to dryness and the use of non-greasy preparations. If the dermatitis is of long standing, and if the skin has lost its elasticity and has become fibrous and friable, the difficulties of effecting a cure become greatly increased, so that resort to ionisation, high-frequency current, X rays and radium, are often necessary. Opinions vary as to the permanent value of X-rays, and a note of warning was sounded at the discussion as to the dangers of an overdose in this region with the appalling condition of skin that may result. Dr. N. S. FINZI was of opinion that, on the whole, radium was of more permanent value than X rays in obstinate cases and he spoke well of high-frequency.

In the last resort surgeons at present favour the operation, devised by the late Sir CHARLES BALL (1851–1916), of dissecting up the perianal skin so as completely to divide all the nerve-endings in this region. In doing so it is important to undercut the lining of the anal canal as well as the perianal skin. The test of an adequate operation is complete anal anæsthesia after operation, with return of sensation within about six weeks. Success without recurrence has been claimed for the great majority of such operations; other surgeons are less confident of permanent cure. It is generally agreed that when pathological lesions of the anal canal, general diseases such as glycosuria, and intestinal parasites, especially the oxyuris, in adults as well as children, have been excluded, there remains a small residue with no definable cause. For the most part these cases occur among neuropaths and must be regarded as neurotic rather than neuritic. As Mr. MILES put it in his concluding remarks, they remain to remind us that there is a limit to medicine and surgery. Future research should be directed towards removing this limitation.

Annotations.

"Ne quid nimis."

THE SEVEREST ANÆMIAS.

THAT changes may occur in the circulating blood of workers with X rays and radium has been recognised for some time, and a case of fatal anæmia in a practitioner of this branch of medicine was recently reported in THE LANCET. Now that the danger is realised there is no doubt that adequate measures will be taken to meet it, for no one would be willing to relinquish so powerful a therapeutic weapon. Further, it is apparent that a fresh means has become available for the experimental study of the obscure conditions grouped together under the name of the severest anæmias. Nowadays the conception of a primary idiopathic pernicious anæmia is no longer held. Certain cases of severe or fatal anæmia are idiopathic in the sense that their ætiology remains unknown, but it is generally recognised that the term pernicious anæmia includes a variety of conditions which are alike in that their chief symptoms are diminution in the number of red blood cells, associated with a relative increase in amount of hæmoglobin and a leucopenia. It is still uncertain, however, how this condition is brought about, whether it is due to destruction of the red blood cells, or whether the fault lies in the hæmopoietic organs. The invariable presence of large quantities of iron in the organs of patients dying from pernicious anæmia suggests that an abnormal destruction of erythrocytes is an important factor in the production of the anæmia, but it is not a proof of the presence of a hæmolytic toxin; it may merely mean that unhealthy cells are produced by the bone marrow. The presence of megaloblasts in the blood stream in pernicious anæmia points to a pathological condition of the marrow, for the small normoblasts rather than the large nucleated forms are characteristic of normal regeneration, and the neutrophile leucopenia so commonly seen in this disease is further indication that the hæmopoietic system is at fault. Throughout life the cells of the blood, in common with almost all the other cells of the body, are constantly dying and being replaced, and the hæmopoietic tissues possess such remarkable powers of compensation that a considerable destruction or loss of blood is possible without there being more than a transient anæmia. Nevertheless it is conceivable that a perfectly healthy bone marrow may be unable to cope with the calls made upon it by abnormal, continued blood destruction, with the result that a recognisable anæmia occurs. More commonly, however, the deleterious agent which destroys the cells of the circulating blood acts also upon the marrow, so that there is both abnormal destruction and defective regeneration. An interesting possibility is the failure of the marrow to make any new cells at all, when the erythrocytes would disappear from the circulation at the end of their ten days or so of life, and the resulting anæmia would be sudden and absolute. Such a primary aplastic anæmia is a purely hypothetical condition, but what might be called secondary aplastic anæmias, in which the marrow gradually ceases to respond to the stimulus to make new calls, undoubtedly do occur. In life these cases can be diagnosed with some degree of certainty by the severe and increasing anæmia, with the complete absence of any signs of regeneration in the red cells of the circulating blood and the extreme leucopenia affecting chiefly the granular leucocytes. But an absolute diagnosis can only be made from an examination of the bone marrow when it is found that the hæmoblastic reaction is absent. The shafts of the long bones contain nothing but fat instead of red marrow, as is usual in pernicious anæmia, and the red marrow itself is atrophic. Whether an anæmia is ever aplastic from the beginning remains to be proved. Usually the condition can be regarded as the stage of exhaustion in the course of a particular disease, but the rapidly fatal termination of certain cases certainly suggests a primary lesion in the marrow. It is possible that radium and X rays may

act thus, and it may be confidently expected that further research will do much to elucidate this obscure condition. Light may come from unexpected directions, and we commend to the attention of our readers the curious similarity of effect produced by absence of vitamins and by exposure to X rays and radium, which is the subject of an important communication this week in our original columns.

NATURAL HEALTH CENTRES.

THE death of Dr. Theodor Schott, which recently occurred at Frankfurt, removes one who had for 44 years exactly applied a number of physical agents to the treatment of chronic disease of the heart, and in whose lifetime the Nauheim method became well known all over the world. A paper which we published last week contained an exact record by four competent observers at one of our own spas of the experimental basis claimed for certain popular methods of electrical treatment. The move towards precision in the study of physical therapeutics is very welcome. The new impetus given to the study of incipient and chronic disease has naturally directed fresh attention to the great sources of energy and healing in waters and climates. An interesting symposium by French authorities appears in the *Vie Médicale* for April 8th. Attention is there called to the "gamut" of French marine climates, of the Channel, Ocean, and Mediterranean coasts, and to the varied Alpine locations, which are available—but far too little utilised—for the treatment of tuberculosis, both in children and adults. Tuberculous maladies form but one group of many chronic infective and toxic conditions that are amenable to climatic influences. We are also reminded of the numerous natural waters of France, many of them situated in fine, sub-Alpine climates, where arthritic affections and dermatoses, cardio-vascular affections, and disorders of digestion, of metabolism, and of the nerve centres, can be treated by waters and baths in beautiful and stimulating surroundings. Dr. H. Jumon, in a study of La Bourboule, states very truly that all such "cures" are in themselves unavoidably fatiguing and ought to be carried out in an atmosphere of peace and repose. He deplores the tendency for health resorts to become merely centres of excitement for pleasure-seekers. This is a very old tendency, and has in the past spoiled many a famous spa. Pleasant distraction, amusement, music are, of course, wanted by the health-seeker, together with the magic of change in daily surroundings, habits, and thoughts. But these should form only the setting for a definite organised medical specialty. The health resort is a treatment centre for incipient and chronic disease. Its accidental and obvious features as a place of recreation and pleasure should not be allowed to obscure its essential purpose of healing and fortification against disease. Moreover, as we have hinted, there is now a body of exact knowledge drawn from many countries and times, dealing with the effective utilisation of health resorts by invalids. It forms no part of authorised medical teaching, or only in an occasional and sporadic way. Sometimes, in the laudable search for definition, health stations are labelled too precisely, as in France. For example, obesity is referred to Brides-les-Bains and enteritis to Châtel-Guyon. We ought to look a little deeper. Symptomatic maladies arise from many causes, and it would be more useful for the medical man to direct his patients according to underlying constitutional conditions, which respond in a definite manner to different forms of hydrological treatment. This hiatus in the education of the practitioner should be filled by instruction in the general principles upon which incipient systemic disorders are actually amenable to the methods of physical medicine. At present the lack of this knowledge is a fruitful source of unfounded pretensions and empirical practice. As one of our French colleagues observes, doctors are apt to refer their patients to waters and baths with a veiled scepticism, and often in order to get rid of them for a time, or simply to give them pleasure.

Dr. G. Bardet, director of the Laboratory of Hydrology in Paris, points out in the same journal the great opportunity existing at the present time for able young practitioners to specialise in climatic and hydrological medicine. Such a movement has already taken firm hold in Switzerland, Belgium, Holland, Italy, and Germany. The creation of new stations, both in the Alps and along the coasts of France, with adequate medical organisation would be, he thinks, of immense benefit to his country. The young physician, specialising according to the local indications during the summer, could spend the winter to great advantage in study and travel. He estimates that from 500 to 600 such medical men could thus find scope for practice as well as study in medical posts of this kind. Certainly it is hardly open to doubt that a more complete provision of health stations is needed, whether for the tuberculous, for delicate children, for the unfit in all walks of life, or for the overworked and the elderly. In England the coast climates—perhaps even more remarkably than in France—offer a complete range of sedative and tonic influences. Inland we have moors and hills, and what these lose in altitude they gain in the tonic influence of northern latitude. But here again we are driven back to the need for more knowledge and coördination. We are glad to learn that an International Society of Medical Hydrology is to devote itself to throwing light on these problems.

ADVISORY COMMITTEE ON THE WELFARE OF THE BLIND.

IN view of the passing of the Blind Persons Act, 1920, the Minister of Health has reconstituted the Advisory Committee on the Welfare of the Blind, so as to afford representation to the local authorities under the Act and to voluntary agencies for the blind, and the following have been appointed members of the Committee: Right Hon. G. H. Roberts, M.P. (Chairman), Mr. P. M. Evans, LL.D. (Vice-Chairman), Mr. Alderman F. Askew, Mr. A. M. Bernard, Miss Winifred Bramhall, Sir Coles Child, Bart., Mr. H. Davey, Mr. James Graham, Mr. Councillor J. A. Hill, Sir William Hodgson, Mr. T. Holt, Mr. A. L. Lowe, C.B.E., Mr. G. F. Mowatt, Mr. H. J. Munro, Sir Arthur Pearson, Bart., C.B.E., Mrs. Wilton Phipps, Rev. P. S. G. Propert, Mr. R. Richardson, M.P., Mr. W. H. Tate. The Committee will advise the Minister on matters relating to the care and supervision of the blind, including any question that may be specially referred to them by the Minister. Mr. F. M. Chapman, of the Ministry of Health, will act as Secretary.

OXYGEN INSUFFLATION IN MORPHINE POISONING.

Professor Brauer has recently discussed[1] the treatment of morphine poisoning as lately adopted at the Eppendorfer Hospital in all severe cases. In his opinion morphine poisoning proves fatal chiefly on account of the CO_2 intoxication which it induces; if this can be prevented the most dangerous symptoms of morphine poisoning are warded off, and doses of morphine which would otherwise inevitably prove fatal can be tolerated with comparative impunity. In his first case, treated by insufflation of oxygen, this procedure was more or less a counsel of despair, for all the standard methods of treatment had been tried for many hours, and life was slowly ebbing away. Yet, within five minutes of flushing the trachea with oxygen there was a remarkable improvement in the patient's colouring, which had been cyanosed. She soon began to breathe automatically, and it was evident that in a few minutes a change had been effected, converting a hopeless case into one with every prospect of recovery. The insufflation of oxygen was continued for about 12 hours, and though aspiration pneumonia of both lower lobes developed, the patient ultimately recovered. The procedure

[1] Beiträge zur Klinik der Tuberkulose, Bd. xlvi., Hft. 1.

recommended by Professor Brauer is described in considerable detail. Tracheotomy having been performed, a long, soft rubber catheter, fitting quite loosely in the tracheotomy tube, is attached to an oxygen cylinder. An air filter is interposed as well as a contrivance for keeping the oxygen moist when the insufflation has to be continued for a long time. The supply of oxygen is graduated by bubbling it through an antiseptic solution before the catheter is introduced into the trachea. When the end of the catheter reaches the bifurcation of the trachea or one of the bronchi it provokes coughing, and thus helps to clear the respiratory passages and facilitate respiration. As long as the escape of oxygen is not too rapid the lungs cannot be over-distended, for gases can easily escape between the cather and the loosely fitting tracheotomy tube, as well as by the larynx. An additional advantage of this procedure is the opportunity it affords for the escape of CO_2, which is otherwise apt to collect in the upper respiratory passages. It is interesting to note that Professor Brauer is so doubtful as to the value of atropine in morphine poisoning that he does not prescribe it in severe cases. His attitude towards this remedy is much the same as that voiced by Professor Cushny in the 1905 edition of his "Text-book of Pharmacology," in which he refers to the "long and weary dispute as to the value of atropine."

THE TREND OF FOOD PRICES.

THE *Economic Review* for April 22nd prints a table of great value, comparing the retail price of food in many countries during the last seven years, taking the year 1914 as the basis. The month of July has been chosen for the comparison, the figures are the official index numbers taken from the *International Labour Review*, and we reproduce them substantially, omitting a few exceptions and qualifications which hardly affect their comparative value.

Date.	United Kingdom.	Canada.	Australia.	New Zealand.	South Africa.	U.S.A.	Paris.	Belgium.	Amsterdam.	Switzerland.	Rome.	Milan.	Spain.	Denmark.	Norway.	Sweden.	Calcutta.
1914	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1915	132	105	131	112	106	98	122	—	114	119	95	—	106	128	—	124	108
1916	161	114	130	119	114	109	132	—	117	141	111	—	113	146	160	142	110
1917	204	157	126	127	127	143	183	—	146	178	137	—	127	166	214	181	116
1918	210	175	132	139	129	165	206	—	176	222	203	325	151	187	279	268	121
1919	217	186	147	144	139	186	261	—	204	250	206	310	130	212	289	310	155
1920	262	227	194	171	197	215	373	453	210	232	318	445	—	253	319	297	170

Man does not live by bread alone, and in the Dominions personal apparel has long been relatively more costly than at home. But when it comes to the pinch it is the actual cost of essential foodstuffs as purchased that determines economic stress, and the table is instructive in this regard.

STAB WOUND OF BOTH VENTRICLES: RECOVERY.

IN his Bradshaw lecture[1] on the Surgery of the Heart, on Dec. 11th, 1919, Sir Charles Ballance tabulated 152 cases of operations on the pericardium and heart performed for injuries. No wound of both ventricles was mentioned by him, but two cases of double wound of right ventricle and auricle and of right ventricle alone were cited, both fatal. Dr. E. M. Freese has recently reported[2] the following remarkable case of recovery after a stab wound of both ventricles. A coloured man was stabbed at 8 P.M., and brought to hospital at 8.30 unconscious. Respirations were feeble and shallow, and no pulse was perceptible in radial or carotid arteries. The pupils were widely dilated and the skin was bathed in cold perspiration. A spot of blood on the shirt over the heart indicated the site of the wound, which was 1½ in. long, and in the fourth interspace 2 in. to the left of the sternum. Only a small amount of blood had escaped, not enough to account for the state of the patient. The area of cardiac dullness was much increased. The diagnosis of wound of the heart with hæmorrhage into the pericardium seemed evident. There was no hæmoptysis. The chest was painted with tincture of iodine, and under light ether anæsthesia, with the wound as the centre, a U-shaped incision was made with the base outwards. The skin and pectoral muscles were turned back, the fourth and fifth costal cartilages were cut through, and the corresponding ribs carefully separated from the pleura for about three inches, and then divided with bone forceps and turned outwards. This gave a very satisfactory exposure, and the wound in the pericardium, from which there was a small stream of blood, was at once seen. The wound was enlarged upwards and to the right. The lack of even carotid pulse was now explained by the pericardium being packed with clot. When this was scooped out the heart at once began to beat violently, spurting blood on to the anæsthetist. The heart wound was instantly plugged with the tip of the left index finger until a suture was passed and tied. This nearly checked the flow, but it was necessary to use a second suture. Much blood was lost during these manipulations, but the action of the heart was fair and the anæsthetist could feel the pulse. But it was now found that blood was welling up behind the heart. Grasping the heart in the left hand, with index finger hooked round the apex, Dr. Freese raised the organ so as to expose a wound in the posterior wall nearly as large as the one closed in the anterior. Owing to the thickness of the left ventricle the wound was not bleeding so rapidly. It was closed with two sutures. The heart had almost stopped beating and no pulse could be felt. An intravenous injection of saline solution was given, the pericardium was sponged out and closed by continuous suture, the ribs were replaced, and the musculocutaneous flap was sutured in place without drainage. The patient was taken to his room, where he arrived at 9.15; the foot of the bed was elevated, hot-water bottles were placed around him, a hypodermic injection of morphine and atropine was given, and rectal infusion was started. On reaching his room the pulse was 72, but very small. The after-history was satisfactory; at no time was there cause for alarm. Bronchitis developed on the second day and was annoying on account of painful cough, which was controlled with heroin. On the fourth day a loud friction murmur was heard over the heart (pericarditis). This lasted for two weeks, but there was never any sign of fluid sufficient to demand interference. The highest temperature, 102° F., was reached on the third day, with a pulse of 150. At this time the bronchitis was most severe. The temperature rose every afternoon to 100° until the eighteenth day. He was discharged a month after operation. The wound had long since healed, and there were no physical signs. X ray examination showed only some thickening of the pleura, with perhaps a little enlargement of the heart shadow.

[1] THE LANCET, 1920, i., 1, 73, 134.
[2] Journal of the American Medical Association, Feb. 19th.

SPLENOMEGALY.

IN their review of recent work on diseases of the spleen in the May number of *Medical Science*, Dr. Gordon Ward and Dr. J. D. Rolleston devote several pages to a consideration of various forms of splenomegaly which have been lately described by British, French, German, Italian, and American observers. Not the least interesting of them is the form to which Luccarrelli has given the provisional title of "war splenomegaly," having found it in a considerable number of soldiers without being able to connect it with any present or past disease such as malaria, enteric fever, spirochætosis icterohæmorrhagica,

or trench fever. Among the various explanations which have been offered to account for the condition are, first, that it is a toxic state of intestinal origin due to the food and character of life at the front, including mental and emotional factors; secondly, that it is an abortive form of trench fever; and, thirdly, that it is due to the presence of the *Spirochæta icterohæmorrhagiæ* or some other organism. This form of splenomegaly is apparently quite distinct from the obscure and rare disease described by Sir John Rose Bradford[1] in his Lumleian lectures on his experiences during the campaign in France and Flanders in 1914–19. The clinical picture in his cases was that of a febrile illness closely resembling enteric fever and lasting several weeks, during which the spleen slowly increased in size to that reached in ordinary splenomedullary leukæmia. The blood examination showed a condition similar to that of splenic anæmia, a diminution of the red cells and a considerable leucopenia. Repeated examination of the blood and stools failed to show any organism of the enteric group, and the Widal reaction was uniformly negative. Another rare form of splenomegaly is that described by Weil, in which the Wassermann reaction was positive though there was no evidence of syphilis, inherited or acquired. Antisyphilitic treatment in these cases had no effect on the splenomegaly or the Wassermann reaction, but caused an aggravation of the general condition. Lastly, reference should be made to the cases reported by Lévy-Franckel of splenomegaly following injections of neosalvarsan for non-syphilitic skin conditions and apparently due to this drug, as all other causes such as syphilis, leukæmia, pseudo-leukæmia, tuberculosis, and cancer could be excluded.

PULMONARY TUBERCULOSIS AND LIFE ASSURANCE.

IN a recently published statistical Bulletin of the Metropolitan Life Insurance Company, U.S.A., we meet with the following startling declaration:—

"More money was disbursed on account of tuberculosis than for any other disease. Despite the fact that the death-rate for tuberculous diseases in 1920 was the lowest in the history of the company, and was two-fifths below that of 1911, more than six and one-half millions were paid for death claims resulting from tuberculosis."

Tuberculosis in this connexion is practically synonymous with pulmonary tuberculosis. Every company has the same experience. In the medico-actuarial mortality investigation compiled by the Association of Life Insurance Medical Directors and the Actuarial Society of America, the following percentages of deaths from pulmonary tuberculosis to total deaths among standard lives are given. Between the ages of 15 and 29, males 22·5 per cent., females 27·2 per cent.; between 30 and 44, males 12·3 per cent., females 13·9 per cent.; from the age of 45 and over, males 4·5 per cent., females 4 per cent. It is clear, therefore, that by far the greatest mortality is experienced among the younger lives, and that it is with these that the greatest loss occurs. Many of the claims fall in the earlier years of life insurance, and, as we pointed out recently, the majority of early claims are due to pulmonary tuberculosis. That a high mortality from this disease should occur is unavoidable at present, but it is felt that with better education of the medical profession generally in this subject many of the early claims—those, let us say, in the first year of insurance—could be avoided. It cannot be too widely known that certain factors definitely predispose to tuberculosis, if they are not indicative of an actual tuberculous state. They are: a family history of the disease, a tall height with relatively low weight; a past history of pleurisy. Young, tall underweights are extremely risky lives from this point of view. The significance of pleurisy is not as widely recognised as it should be; it is not going too far to say that pleurisy, when not due to some known cause such as pneumonia, is, in the majority of cases, definitely tuberculous. Another stumbling-block is that many practitioners are content with such diagnoses as unilateral bronchitis, unexplained and unclassified "anæmia," or "repeated influenzal attacks." Under such subterfuges of ignorance, pulmonary tuberculosis not infrequently masquerades. Putting aside all intricate or subtle methods of detection of early phthisis, there are four cardinal signs and symptoms, the conjunction of any two or three of which is an omen so sinister that the strongest suspicion should be aroused, and examinations of the sputum made for tubercle bacilli, repeated many times if necessary; there are progressive loss of weight, progressive weakness, hæmoptysis (though ever so slight), and evening fever. Simple as these things are, their general recognition would result in earlier diagnosis of this dread disease, a far greater percentage of recoveries, a great saving of the public money now spent on institutions and hospitals, and a sparing of immense losses generally in the financial affairs of the country. The early claim for pulmonary tuberculosis blesses neither him who gives nor he who takes, and is, we fear, often a slur on the skill of our profession.

[1] THE LANCET, 1920, ii., 535–40.

HOSPITALS AND INCOME-TAX.

LAST November a subcommittee was appointed by King Edward's Hospital Fund for London to consider the question of securing exemption from income-tax on voluntary contributions to hospitals. Sir Walter Trower, Sir Basil Mayhew, Mr. Henry L. Hopkinson, and Mr. John G. Griffiths were the members of this committee, the first-named being elected as its chairman. The report which has just been issued, signed by three members, records the opinion that relief in respect of income-tax paid on subscriptions and donations to hospitals is practicable, and offers a definite form of financial aid to embarrassed hospital finance. They desire that their report should be laid before Lord Cave's Hospital Committee. Sir Walter Trower adds a note regretting that he is unable to accept the principle of exemption from income-tax, which he finds to be inconsistent with the report of the Royal Commission on the Income-tax. Such exemption being equivalent, in his opinion, to a direct grant by the Crown must raise the question of State control.

A FRENCH REVIEW OF SURGICAL PROGRESS.

STIMULATED by Dr. de Lavergne's account[1] of the advances made by medicine in the war, Professor Billet, also a teacher at Val-de-Grâce, has sketched[2] the astonishing improvements that this war has brought to surgery. His review is the more interesting as it is taken from a different viewpoint from that of reviews which have appeared in England, and, indeed, the only British practitioner mentioned is Sir Almroth Wright. The review may be briefly summarised thus. The great lesson taught to surgeons by the war is their personal limitation, and the need of team-work. Working by himself, the most skilful surgeon must fall short of possibilities; he therefore must accept and take guidance from other persons, experts in eyes, ears, X rays, bacteriology, chemistry, medicine, &c., if he is to do the best possible for his patients. So thoroughly has this lesson been learnt in France that the members of the profession are beginning to ask for an organisation and equipment for civil hospitals similar to that they had found so satisfactory when they were working in army hospitals during the war. The war began with a great surprise to the profession; it had been thought that gunshot wounds were rather slight and would heal at once. It was bullets that were thought of, it was shells which came. And just as the soldiers were overwhelmed with shell in the first days, so were the surgeons overwhelmed with septic wounds, with tetanus, septicæmia, and gas-gangrene. By the end of October, 1914, preventive inoculation had eliminated tetanus, but septicæmia and gas-gangrene remained. The dreaded invaders were the anaerobic

[1] THE LANCET, April 2nd, p. 712.
[2] Archives de Médecine et de Pharmacie Militaires, lxxiv., No. 2.

bacilli. To defeat them every wound was thoroughly opened up and then irrigated with antiseptics. Results were better, but every wound suppurated and some patients died exhausted; some had to have their limbs, saved with so much trouble, amputated later. Antiseptics became suspected. Some thought they injured the tissues, some that they did not go deep enough. In August, 1915, Carrel with his tubes, Dakin with his solution, seemed to have won a complete victory. But the aseptic surgeons were still unsatisfied, feeling that antiseptics had no right to be resuscitated, and Delore in 1915 and Leribat at Verdun in 1916 told of a simpler, better, treatment for wounds of the knee. Leribat opened up the track, excised the wounded tissues, made the joint clean, washed it out with ether, put in a tiny drain (removed after 48 hours), sewed up the synovial membrane first and then the skin, put on a plaster splint for a fortnight, and discharged his patients thereafter with knees that could bend, his success being largely due to more exact technique, and to smaller, better judged incisions. In November of the same year, 1916, Gaudier extended this principle to the treatment of all wounds, and became the author of the method of "primary suture." But some wounds, already left too long, and so become infected, were unsuitable; to them Carrel's method was applied, and "delayed primary suture" became possible. Thus was ordinary suppuration defeated. There remained gas-gangrene, which proved to be beyond the power of the surgeon alone; he had to call on the laboratory for help. Still, it was not till late in 1916 that, the organisms having been isolated and an effective vaccine prepared, the last problem in the treatment of wounds was solved. Since then great triumphs have been won in repairing deformities, especially by Morestin, by autoplasty, splints or supports, and grafts. And grafts are so various. Before the war Tanton had replaced a lacerated urethra with a graft from a saphena vein; since the war Legueux has had marked success in replacing lost urethræ with arteries, living or dead. Tendons may be grafted even with dead tendon (Nageotte and Sencert), nerves repaired even with dead nerve tissue, though supports for the limbs may still be needed. As for bones, there are the three grafting methods: that of Delagenière, who uses a small superficial shaving off the bone, a graft of periosteum with a little scale of bone below it; that of Albee, who takes a piece of bone from the periosteum to the medullary canal; and that of Nageotte, who uses dead bone; and there are all sorts of combinations of the three. So much for surgical affections. But surgery can help medicine. Carrel-Dakin methods are useful in treating chronic suppurating pleurisy. As for acute pleurisy, some propose to remove it in mass, as they do tumours, and to close the wound at once. Others say drainage is useless. Ombredanne in appendicitis removes the appendix and at once closes the peritoneum; less and less do people drain the pleura with large drainage-tubes; some even talk of immediate closure once the pus is out. Next vaccines. Osteomyelitis, if chronic, yields to Carrel-Dakin, but if acute may be mastered by staphylococcus vaccines (R. Grégoire). The streptococcus is more obstinate, but is at times thus overcome. Such are the surgical advances of the war, and progress continues in peace. Nor yet has all the harvest been gathered.

THE NEWLY CONSTITUTED CENTRAL MIDWIVES BOARD.

THE Central Midwives Board has now completed its reconstitution under the Act of 1918. The initiative, it may be noted, for a wider representation originated with the Board itself, and there are now five certified midwives with seats on the tribunal. The membership is as follows, the names of new members being asterisked: Sir Francis Champneys, in the chair; Professor Henry Briggs, Lady Mabelle Egerton, *Miss Gladys Le Geyt, and *Miss M. Olive Haydon, appointed by the Ministry of Health; Dr. W. S. A. Griffith, appointed by the Royal College of Surgeons of England; Dr. J. S. Fairbairn, appointed by the Incorporated Midwives Institute; Dr. C. Sangster, appointed by the Society of Apothecaries; *Dr. J. J. Jervis, appointed by the Association of Municipal Corporations; *Dr. R. A. Lyster, appointed by the Society of Medical Officers of Health; Miss Rosalind Paget, appointed by the Queen Victoria's Jubilee Institute for Nurses; Mr. L. H. West, LL.D., appointed by the Association of County Councils; *Miss Pollard and *Miss Elizabeth Pearson, appointed by the Incorporated Midwives' Institute. Dr. Jervis is chief health officer for the city of Leeds, and Dr. Lyster for the county of Hants. Of the midwife representatives, Miss Le Geyt is superintendent of a school for mothers, Miss Haydon has charge of a midwives' training school, Miss Pollard is inspector of midwives for the county of Middlesex, and Miss Pearson has been active in organising midwives' associations in the country. It will be seen that the new constitution has resulted in a widely representative gathering and gives colour to the hope that, without neglecting the necessary but painful work of penal sessions, the Central Midwives Board may turn its attention to constructive work for the building up of a convenient and efficient midwifery service in this country. No one any longer grudges the trained midwife her place as an essential part of any public health service. The more comfort and dignity that can be brought into the midwife's life, the better will be the service offered.

THE RÔLE OF THE NERVOUS SYSTEM IN BODY TEMPERATURE REGULATION.

THE rôle of the nervous system in the regulation of temperature is known to be a very complex one. H. G. Barbour and E. Tolstoi have made experiments on dogs by placing them up to the neck in a bath at 20° C. for half an hour or more, the temperature of the room being 22° C. The water was not sufficiently cold to lower the body temperature, but distinctly aroused the regulation mechanism against cooling. There was a slight gain of 0·1° to 0·8° C. in body temperature; there was an increase of 1 to 2 per cent. in the blood solids. Similar dogs with transection of the cord between the sixth and seventh cervical segment were quite unable to withstand baths of 20° C., exhibiting a rapid fall in body temperature, usually to a dangerous level in 40 minutes. Unlike normal dogs, they failed to exhibit shivering, and all showed an abnormally low blood-solid percentage as the result of the operation. The cold stimulus was unable to evoke more than a very weak response. This inability to reduce the blood volume and thereby diminish the flow through the body surface helps to account for the very rapid loss of body temperature. Dogs made poikilothermal by cervical cord section are deprived of reactions which may be set up between the temperature sense nerve-endings and the circulation. The shifting of water from the blood to the tissues is evidently such a reaction. The authors conclude that the rôle of the nervous system in the reaction against cold is to convey impulses from the temperature sense nerve-endings to heat centres, which in turn, besides shivering and vaso-constriction, incite blood thickening. Hæmo-concentration lessens the water available either for heat dissipation by evaporation or for providing blood bulk sufficient to flood the peripheral vessels. Normal dogs respond regularly to a moderately high environmental bath temperature (40°–41° C.) by hæmo-dilution and to a cold environment (11°–8° C.) by hæmo-concentration. The change usually approximates to 2 per cent. of the total blood-weight, which means 10 per cent. change in the fluid content of the blood. The circulatory factor in regulation against overheating and cooling consists not merely in transferring of blood respectively to or from the body surface, but also in actual shifting of water into or out of the blood-stream. Thus, response to a hot environment is peripheral vaso-dilatation plus hæmo-dilution, while a cold environment evokes vaso-constriction plus hæmo-concentration.

THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

THE annual meeting of the British Medical Association opens at Newcastle-on-Tyne on Friday, July 15th, when the Representative Body meets at 10 A.M. and continues in session until the following Tuesday, on which day, at 2 P.M., the statutory annual general meeting will be held. Professor David Drummond is announced to give his presidential address at 8 P.M. on the same day, and on Wednesday, Thursday, and Friday, July 20th–22nd, the 17 sections will conduct their discussions, the first group on each of the three days, the second group on two days, and the third on one day only.

Group I.—Medicine: Professor Thomas Beattie.
Surgery: Professor J. Rutherford Morison.
Pathology and Bacteriology: Professor Stuart McDonald.
Preventive Medicine with Industrial Diseases: Sir Thomas Oliver.
Orthopædics and Diseases in Children: Mr. A. H. Tubby.

Group II.—Neurology and Psychiatry (July 20th and 21st): Professor A. W. Mackintosh.
Obstetrics and Gynæcology (July 21st and 22nd): Professor R. P. Ranken Lyle.
Ophthalmology (July 20th and 21st): Professor J. D. Wardale.
Oto-Rhino-Laryngology (July 20th and 21st): Dr. G. William Hill.
Physiology, Pharmacology, Therapeutics, and Dietetics (July 20th and 21st): Dr. H. H. Dale.
Venereal Diseases (July 20th and 21st): Colonel L. W. Harrison.

Group III.—Ambulance and Red Cross (July 20th): Sir James Cantlie.
Dermatology (July 21st): Dr. J. Farquhar Christie.
Medical Sociology (July 22nd): Sir Jenner Verrall.
Proctology (July 20th): Mr. J. P. Lockhart-Mummery.
Radiology and Electro-Therapeutics (July 22nd): Dr. Robert Knox.
Urology (July 22nd): Mr. J. W. Thomson Walker.

On Wednesday, at 8 P.M., Sir Thomas Oliver will give an address on Industrial Diseases, and on Friday, at 7.30 P.M., Professor Arthur Keith will deliver a popular lecture on Evolutionary Wounds. The annual dinner of the Association is fixed for Thursday at 7.30 P.M.

CANCER IN ANIMALS.

AT a recent meeting of the Académie de Médecine Mr. Cadiot read an interesting paper[1] on the distribution of cancer in animals, utilising a number of facts and figures taken from the literature in order to draw conclusions on some of the general problems of cancer. From the fact that carnivorous and herbivorous animals show no great difference in the incidence of cancer, the author deduces that diet does not constitute an important factor in the genesis of cancer. Age, in animals as in man, stands out as the predominating factor. There are, however, interesting differences in the incidence of cancer in so far as it affects the different organs, and these differences also exist between different species of animals. Thus cancer of the penis appears to be particularly frequent in horses, and according to the author occurs most frequently in castrated animals. In oxen the atrophy of the testicles, which takes place after castration by "twisting," presents a predisposing factor for the development of malignant growths, chiefly of a sarcomatous type. The author is, however, on very debatable ground when he tries to prove from the incidence of cancer in animals that chronic irritation is of comparatively little importance. He bases his argument chiefly on the assertions that cancer of the digestive tract of animals is very rare, and that in draught animals cancer of the skin does not develop in those sites where the pressure of the collar and the friction of the harness produce a chronic irritation. A glance at the tables published in the Third Scientific Report of the Imperial Cancer Research Fund entitled, "Malignant New Growths in Domesticated Mammals," shows that cancer of the digestive tract is not as infrequent as Mr. Cadiot believes it to be. And he must surely have forgotten the "horn core" of cattle in India, where a squamous cell carcinoma develops with great frequency at the root of the right horn in cattle employed for draught purposes, the right horn being used to attach the animal to the wagon. But the whole question of the relation of chronic irritation to the causation of cancer has during the last few years been raised from the slough of argument and placed on a secure basis by experiment. The work of Fibiger on the experimental production of cancer of the stomach by feeding with spiroptera, and the experimental production of cancer by prolonged painting with coal tar—first successfully demonstrated by Yamagiwa and Ichikawa, and since confirmed by Fibiger and by Murray and Woglom in this country—represent important advances of our knowledge of the origin of cancer. A grain of experiment, properly conducted, is worth at least an ounce of argument.

[1] Bulletin de l'Académie de Médecine, 1921, No. 13, Séance du 29 Mars, 1921, p. 396.

THE CASSEL HOSPITAL

THE Cassel Hospital for Functional Nervous Disorders will shortly be ready for the admission of patients, with Dr. T. A. Ross as medical director; the medical committee includes Miss Aldrich-Blake, Dr. Farquhar Buzzard, Sir Maurice Craig, Lord Dawson, Professor J. S. Haldane, F.R.S., Dr. Henry Head, F.R.S., Dr. A. F. Hurst, and Sir Frederick Treves. Patients eligible for admission are members of the educated classes who are suffering from neuroses not directly traceable to organic disease, who cannot afford treatment in a nursing home. The hospital is situated among beautiful surroundings at Penshurst, Kent, and there will be accommodation for 60 patients, who will be asked to contribute only towards maintenance. In medical circles the want of private hospitals for educated patients unable to meet the expense of nursing homes, most of which are run on a comparatively small scale, has long formed a subject of comment. From time to time schemes for such establishments have been devised, but seldom, we believe, in the end proceeded with. The Cassel Hospital, accordingly, will really meet a long-felt want, and the success which it will doubtless enjoy should provide an impetus to further advance along similar lines. Obviously, sufferers from one or other kind of neurosis form but a part of that large class who hitherto have had only the Hobson's choice of a nursing home which they cannot afford or a general hospital where little or no special provision for private cases is made. Though in some parts of the country nursing homes of a sufficient size almost to justify their description as private hospitals have been springing up to meet the need, with them the expense of running the establishment must always militate against the maintenance of fees at a comparatively moderate level. This aspect of the problem, through the generosity of its founder, would appear to be satisfactorily settled as far as the new Cassel Hospital is concerned. From the standpoint of therapy there are advantages in the segregation of patients whose complaint is of "nerves" in any form, since they will be free from the adverse influence, on the sensitive mind, of contact, direct or indirect, with the mixed medical and surgical cases of general hospitals. On the other hand, too sheltered a life in a secure environment of comfort and beauty brings its own danger in removing the incentive to cope with the adverse conditions of real life. However, once let the proper atmosphere of cure be created in such a private hospital and it is bound to prove worthy of the hopes at present centred in it.

Dr. Sidney Reginald Dyer, Medical Inspector of Prisons, has been appointed one of the Commissioners under the Prison Act.

THE House and Library of the Royal Society of Medicine will be closed from Saturday, May 14th, until Tuesday, May 17th, both days inclusive.

MEDICAL STATISTICS.

I.

IN these days when the expediency of compiling and analysing clinical records is debated, it is fitting to inquire into the past relations between medical and statistical science. Is the application of the numerical method to the subject matter of medicine a trivial and time-wasting ingenuity as some hold, or is it an important stage in the development of our art, as others proclaim? An answer to this question must needs be coloured by individual predilection, but a brief retrospect of medical history will provide certain data of value in reaching a decision. On this account we propose to notice some incidents which have rather tended to pass out of the memories of the present generation, to display the connexion between the progress of medicine and the progress of a department of knowledge which seems at first wholly alien from it.

Historical Retrospect.

The great Hippocrates has received many titles of honour from an admiring posterity, but that of statistician has not been included. Yet the student of his "genuine" works will find therein much which is uncommonly suggestive of a statistical method. We do not refer to the collection of cases upon the strength of which Sir Gilbert Blane attempted to assess the fatality of untreated "fevers," but to the insistence upon a synthesis of individual experiences as the preliminary of any general theory, whether of epidemiology or endemiology. This side of the Hippocratic doctrine was the stock-in-trade of the Empiric sect, who, indeed, according to their impartial critic, Celsus, and their by no means impartial critic, Galen, would believe in nothing unless it were supported by an array of evidence which was statistical in all but name. The works of the Empirics have perished, and Galen set himself to blacken their reputation, with such success that the term became a synonym for quack. No massed clinical records other than those of Hippocrates himself have come down to us.

When Sir Gilbert Blane wished to compare his experience with that of the ancient masters, he could do no better than contrast statistics of his hospital and private practice with the records appended to the third book of Hippocrates's epidemics. The same remark applies to the experience of preventive medicine which must have been acquired through the centuries of Roman civilisation. Sir John Simon[1] and others have pointed out that in the best days of Rome public hygiene and preventive medicine were a care of the legislature, but of the successes and failures of the system we know nothing. The normal death-rate, its relation to urbanisation, the influence of employment, the toll taken by epidemics, these things are matters of conjecture.[2] Of the theoretical basis of ancient medicine we know much, of its practical consequences hardly anything. Nor when we turn to modern times, to the practice of medicine from the Renaissance down to the end of the seventeenth century, is the case much better. The physician of the middle of the seventeeth century had indeed abandoned some superstitions of Chaucer's Doctor of Physik, but he was not perhaps a much more scientific or efficient practitioner. Indeed, so ripe a scholar and merciful a critic as the present Harveian Librarian has said of a still more recent generation that "the doctors were still engaged in speculating in the quiet of their studies instead of seeking for information in the book of Nature."[3]

The greatest English physician of that age clearly appreciated the defect, and his Medical Observations aim at restoring the ancient Empiric tradition. Sydenham was contemptuous of theory, and had little—too little—respect for the experimental researches of his best contemporaries. He provided medical records, statistics of disease without arithmetic. No doubt he was acquainted with the political arithmeticians of his day, as he was with the experimental philosophers and anatomists, but he did not adopt their method in presenting his facts. It is instructive to compare his direct influence upon the develepment of medical science with that of a non-medical contemporary.

Vital statistics of a kind had been regularly compiled in London for a century before Sydenham's time, but no real use had been made of them by physicians. Indeed, no physician of Sydenham's time exploited them; the *medical* pioneer was the elder Heberden, who, in the middle of the eighteenth century, financed and otherwise encouraged a compilation of the bills upon which his son at the beginning of the nineteenth century wrote a dissertation, to be mentioned below.

John Graunt: The Father of Medical Statistics.

But there was in the seventeenth century a layman who perceived the importance of medico-statistical records. John Graunt, the London draper whose "Natural and Political Observations upon the Bills of Mortality" first appeared in 1662, was the father of medical statistics as well as of vital statistics in the larger sense. He was not only the first to demonstrate the high rate of mortality in early life and the contrast between urban and rural rates of mortality (facts so commonplace to us that we forget they were ever novelties and in need of proof), but he undertook a criticism of sources which some persons of our own time suppose to be beyond the range of a mere arithmetician. He would not, for instance, accept rickets as a "new disease" of the year 1634 without asking himself whether it might not be that a disease "which had been long before, did then first receive its name?" and surmised that some, but not all, the increase was due to a transfer from another rubric. In truth a comparison of the criticism of his nosological material performed by the seventeenth century draper with that effected by an erudite physician at the beginning of the nineteenth century does no dishonour to the old tradesman.

Dr. William Heberden the younger, in his "Observations on the Increase and Decrease of Different Diseases," remarked that "there is scarcely any fact to be collected from the bills of mortality more worthy the attention of physicians than the gradual decline of dysentery," and attributed the result to greater cleanliness and better ventilation. As Dr. Charles Creighton pointed out,[4] the decline of dysentery needed no such explanation; it was an arithmetical mistake. Heberden supposed that "griping in the guts" was dysentery when it really was infantile diarrhœa; he overlooked the significance of the age distribution and failed to observe the gradual transfer to the rubric convulsions. He did indeed notice the increase of convulsions but accounted for it by a transfer of "chrisomes" and infants, without remarking that this transfer had already been effected before convulsions gave a large quota, and without perceiving that such a transfer could not make so great a change as had occurred.

The vital statistician who connects Graunt with Halley and Halley with other illustrious mathematicians like De Moivre and the Bernoullis, these mathematicians with the technicians Gompertz, Finlaison, Makeham and the actuaries of our own time, will not fail to do reverence to the seventeenth century pioneer. The medical statistician and the medical officer of health should remember that Graunt inspired Derham, that Derham was the original of Süssmilch, and that Süssmilch supplied Malthus with ammunition, the discharge of which did much to create a state of opinion favourable to the establishment of a national system of vital and medical statistics.

But if ultimately Graunt had a worthy disciple in the medical profession, it was not until he had been in his grave more than a century. He died in 1674 and

[1] English Sanitary Institutions, Chap. 2.

[2] Cf. Southwood Smith's gallant attempt to deduce the average longevity in Rome from a sentence in the Pandects. (The Philosophy of Health. London, 1835, vol. i., p. 132.)

[3] Medicine in England during the Reign of George III., by Arnold Chaplin, M.D., p. 6.

[4] History of Epidemics in Britain, vol. ii., p. 747.

William Farr was born in 1807. The only physicians of the eighteenth century who made sensible additions to statistical knowledge were Dr. Thomas Short and Dr. William Heberden the elder. Of Short Dr. Creighton has remarked, with little charity but not without truth, "That so much statistical or arithmetical zeal and exhaustiveness should go with so total a deficiency of the critical and historical sense, is noteworthy and, perhaps, not unparalleled in modern times."[5] To Heberden we owe the collection of statistics edited by Corbyn Morris[6] in 1759, incorporating some excellent critical remarks and suggestions for improvement of the civic records which did not receive the attention they deserved. No other physicians seem to have perceived that a combination of Graunt's arithmetical system with the descriptive method of Sydenham—in short, to mix figures with brains, as Turner compounded his colours—would advantage medical science and art. What was speculative in Sydenham's plan—and there was a good deal more theorising in it than many suppose—found plenty of imitators. Whether the general art of medicine benefited, the reader of Dr. Chaplin's FitzPatrick lectures may judge. Whether the sanitary administration of the late eighteenth century was a notable improvement upon that of the Stuarts is a question the student of Creighton and Simon can answer with no great confidence.

At the beginning of the nineteenth century we still lacked any clear portrayal of the sanitary circumstances of the population. The prevalence and the fatality of the commonest diseases were still matters of conflicting opinion. Instructed observers could, and did, dispute whether consumption were increasing or decreasing, just as but a few years earlier they differed by 100 per cent. in their estimates of the English population.

II.

Although Sir Gilbert Blane, in his "Select Dissertations," published statistical observations of value, and Dr. Bissett Hawkins actually devoted a course of Goulstonian lectures to the arithmetic of disease before George IV. was dead, Heberden's "Observations" of 1801 are still the only medico-statistical literature before Farr which deserve much notice.

We have previously mentioned one of Heberden's failures; it would be wrong, even in so brief a review, to omit reference to his successes. An instance was his recognition of the constancy of the epidemic curve of plague which led him to make the following pertinent remark:—

> "May not this influence of the seasons on diseases be the real cause of the strange and contradictory accounts we have received concerning the cure of the yellow fever in the West Indies? Accounts which only agree in this, that the most obvious methods of treatment are wrong. It is reasonable to suppose that physicians there would first make trial of the remedies most approved in similar diseases in other places; yet we find they all failed. And why? Because the epidemic was then at its height. But afterwards, all their different modes of practice as universally succeeded. For when the disease began to decline, the mortality of itself became much less, and of those who died, most lingered on for a considerable time beyond their usual period. Which exactly corresponds with what has at all times been reported of the plague, under every variation of medicine, and climate."[7]

Many physicians since 1801 have had cause to realise the truth of this statistically grounded inference; its general appreciation would have diminished the large and growing number of tombstones sacred to the memory of "cures."

"*Mr. Farr: A Gentleman of the Medical Profession.*"

But one swallow does not make a summer, nor the statistical acumen even of a Censor of the College in its most aristocratic days effect a revolution. The real revolutionary was a licentiate of the Society of Apothecaries, a "Mr. Farr, a gentleman of the medical profession," who was appointed Compiler of Abstracts in the General Register Office on July 10th, 1839. Although Mr. Noel Humphreys earned the gratitude of all medical men by his collection of Farr's writings, published in 1885, a really adequate edition of Farr has yet to be produced. We sometimes dream of such an edition; we picture it with an introduction by Farr's worthy successor, Dr. Thomas Stevenson, and with footnotes and appendices by Dr. John Brownlee. But it is an idle dream; governments in England, so the newspapers tell us, often spend money in odd ways, but at least they have never been so eccentric as to waste it on the publication of the collected works of great Englishmen. Farr was a very great Englishman, and the characteristics of his genius were precisely those which, in moments of self-esteem, we like to fancy are typically English. We can make our point clear by contrasting him with two great men who were at their prime when he was young, and both made important contributions to statistical knowledge, Siméon Poisson and George Boole. Poisson wrote a large treatise upon ostensibly the most practical of subjects, the best way to secure just verdicts in courts of law; Boole dealt with the very matter-of-fact problem of numerical approximation. But the most superficial reader of Poisson or of Boole—not that their works are very attractive to a hasty reader—will at once realise that the authors are far more interested in algebra than in the concrete applications of their algebra. Farr has left many pages which, to the aforementioned hasty reader, will offer almost as many algebraical difficulties as even Boole; but in the densest forest of symbols Farr never loses sight of, and never allows his companion to lose sight of, some perfectly definite and concrete end which he proposes to reach.

No branch of medical or vital statistics needs for its cultivation a greater variety of algebraical tools than that concerned with the production of complete life tables; the natural faculty which characterises the born mathematician is not, indeed, essential, but skill in the manipulation of symbols is. To Farr a life table was—

> "An instrument of investigation; it may be called a *biometer*, for it gives the exact measure of the duration of life under given circumstances. Such a table has to be constructed for each district and for each profession, to determine their degrees of salubrity. To multiply these constructions, then, it is necessary to lay down rules, which, while they involve a minimum amount of arithmetical labour, will yield results as correct as can be obtained in the present state of our observations."[8]

This was the spirit of all his work. He faced mathematical difficulties with a courage which nothing could daunt—it takes some courage for a self-taught man to venture upon original research within the province of the oldest of the sciences—when they obstructed his progress towards a practical end. He never attempted to compete with the masters of pure analysis on their own ground. We have been the gainers. The greatest mathematical statisticians of the first half of the nineteenth century were not Englishmen; we have not to our credit any theoretical work of that date which will compare with the researches of Laplace and of Poisson in France or of Gauss in Germany; but of no civilised country can a record of fatal disease be constructed with the precision which appertains to the medico-statistical history of England and Wales since 1840.

The practical advantages to the physician and the sanitarian are enormous. Matters which our great grandparents fiercely debated, topics respecting which only a very shrewd and experienced physician of 1820 could form an opinion, are now within the compass of a junior medical student. If Farr had been born a generation earlier and the General Register Office had been founded in 1807 instead of in 1837, the sanitary history of our manufacturing towns might have been different. If even the lessons he taught year by year had sunk into the minds of all members of our profession, many disappointments would have been spared

[5] History of Epidemics in Britain, vol. i., p. 405.
[6] The origin of the work is described in Dr. Hull's edition of the Economic Writings of Sir William Petty, vol. ii., p. 641.
[7] Observations on the Increase and Decrease of Different Diseases, 1801, p. 67.
[8] From a paper contributed to the Proceedings of the Royal Society in 1859. (See Farr's "Vital Statistics," ed. Humphreys, London, 1885, p. 492.)

and perhaps some false apprehensions quieted. The curious reader of old blue-books will find much of interest in the census reports of Lamb's friend Rickman, but Rickman was not a Farr. Rickman, for instance (in 1831), commented upon the apparent unhealthiness of the northern manufacturing districts, but he could not speak with much authority for his basis of facts was no more than an abstract of burial and baptismal registers. These are the words of Farr (from the supplement to the thirty-fifth Annual Report):—

"Take for example the group of 51 districts called healthy for the sake of distinction, and here it is found that the annual mortality per cent. of boys under 5 years of age was 4·246, of girls 3·501. Turn to the district of Liverpool; the mortality of boys was 14·475, of girls 13·429. Here it is evident that some pregnant exceptional causes of death are in operation in this second city of England. What are these causes? Do they admit of removal? If they do admit of removal, is this destruction of life to be allowed to go on indefinitely? It is found that of 10,000 children born alive in Liverpool 5396 live five years, a number that in the healthy districts could be provided by 6544 annual births."

The "dear old doctor"—as Mr. Humphreys called him—could round a period in the early Victorian style with the best; the classical quotations in his reports might have tempted William Pitt or Charles Fox to become statisticians; but he could also use very plain English indeed. Statistics with plain English as a propellent are formidable missiles, and those members of our profession who in the last 50 years have effected salutary changes in the second city of England (there is still much to do) owe something to the long-range artillery of the General Register Office.

We could fill many columns with examples, but we must take leave of the greatest of medical statisticians with one observation. Farr's work has on it the seal of all supreme achievements; it is indestructible. It was, of course, a piece of good luck that his three successors, the late Dr. William Ogle, Dr. John Tatham, and Dr. Thomas Stevenson were men having the same ideals and zealous to build higher upon his foundations. The nation, we hope, will always be fortunate enough to secure equally worthy spiritual descendants of the founder. But no weakness of human instruments or credible deteriorations of the system could ever take from the General Register Office the power of "rendering immense service to sanitary science by enabling it to use exact numerical standards in place of the former vague adjectives."[9] So far as records of mortality are concerned, the real reformer is one who treads accurately in the footprints of William Farr.

III.

We have seen what, in the hands of a man of genius, the arithmetical method can contribute to the practical arts of the sanitarian and the clinician. It replaced, in Simon's phrase, "vague adjectives" and indecisive controversies by "exact numerical standards." It not only showed which municipal sheep were black, but measured how much blacker they were than their neighbours. It showed not, perhaps, what diseases (or, if we please, symptom-complexes) were most deadly, but certainly what diseases educated men supposed to be most deadly. Incidentally, it has furnished the high-browed or, if the reader prefers, sagacious epidemiologists who revere Sydenham and his epidemic constitutions with some of their best arguments. But the praise of our fathers which begat us cannot be the last word of science, nor is it the best compliment to our fathers. It is proper to consider what they did not do and whether we should not set about the task.

The Correlation of Morbidity with Mortality.

Farr once remarked that "the mean lifetime of a generation may be the same, and yet the several lifetimes of the individuals of which it is composed may vary infinitely," and spoke of the "entire revolution in the life of the human race" which "would follow if every person born lived the average lifetime of 50 years, or if half the deaths happened in infancy and the other half at the end of 100 years or at any very advanced age." He means that such a statistical average as the expectation of life might arise in an infinite number of ways, each corresponding to a different state of affairs. Still using mortality records as our ultimate data, we can explore many of these possibilities, but so long as we are restricted to death registers we must remain ignorant of much which we desire to know.

We are given that A B died at 31, C D at 32, and E F at 34, all of organic disease of the heart, and the statistician enters three units in the age-group 25–35; but how very different may be the histories of these three individuals. One perhaps, has been a dyspnœic cripple for years and died by inches; another has passed out of existence in a flash with a ruptured aneurysm, and the third—why the third may have been a psychopath. A statistical homogeneity in the matter of dying may conceal a very wide heterogeneity in the matter of living.

"A king of ability or an able minister" said Bagehot, "sits in an orderly room filled with memorials, and returns, and documents, and memoranda. These are his world; among these, he of necessity lives and moves. Yet how little of the real life of the nation he governs can be represented in an official form! How much of real suffering is there that statistics can never tell! How much of obvious good is there that no memorandum to a minister will ever mention! How much deception is there in what such documents contain!"

This criticism touches any attempt to evaluate the health of a nation wholly in terms of its mortality. Farr, of course, was quite conscious of the weakness, and strove ever and again to overcome it, to correlate morbidity with mortality. But he could not effect a satisfactory correlation, and now, nearly forty years after his death, we are still at a loss.

We may look at this matter from two points of view. In the first place we may inquire into the general efficiency of a population. We may seek to know how many of the days from birth to death were passed in the enjoyment of health. This is the easier and perhaps the more important task. The operations of private or public sickness insurance institutions have, in fact, already rendered available much information. Yet even here there are difficulties; there must be some objective criterion of healthiness, and if this is to be, as it usually must be, capacity to follow an occupation, we are liable to fall into serious mistakes. It does not follow that, because a judge of the High Court keeps his house with a cold and a solicitor does not, judicial duties are more unhealthy than the drawing of briefs. But this aspect of morbidity, although it concerns the medical profession, is not wholly their business, indeed, some actuaries have doubted whether it is their business at all. These actuaries were, no doubt, in error, but considerations of space induce us to pass at once to the other question which is exclusively medical, and to ask whether the arithmetical method applied to other data than recorded deaths can be of any service to the clinician.

Those who remember a charming essay of the late Sir William Osler on an Alabama student will recall his remarks upon Louis, who was addicted to the numerical method. But few have the patience or the opportunities of Louis; one has to consider the conditions of ordinary medical practice. Patients come to us with symptoms, not with diseases; they very often say, "Doctor, I've got a heavy cold on me," very rarely, "I'm afraid I am infected with the *Micrococcus catarrhalis*."

"Colds" from the Statistical Viewpoint.

"Colds" are certainly an object of statistical interest if numerical frequency is an element of statistical interest. Now the "cold" may be a "Ding an sich" or it may be the prelude of a more important "Ding." Perhaps it may be suggested that an enumeration of the "colds" which did and those which did not lead up to something else might be the basis of a statistical inquiry. But the research does not seem a promising one. It might enable the practitioner confronted with a husky panel patient to assert that the chance is 1 in 100 that he will soon have to treat him for phthisis, 3 in 100

[9] Simon: English Sanitary Institution, p. 212.

that lobar pneumonia will develop, and so on, but this arithmetical information will gratify nobody save a chimera identified by the cartoonist of the *Daily Mirror* with an official of the Ministry of Health. But if one collected statistics of "colds" upon a slightly different plan the results might be more rewarding. Do the "colds" of sedentary workers last longer than those of out-door workers? *Ceteris paribus*, does keeping the house answer better than going out? Is it true that "summer colds" are the most intractable? Is the mode of onset of a common "cold" of any importance in its prognosis as to severity and duration? Is there a secular change of type in the common "cold"? These are all questions not of life and death, but of importance to health and happiness. It is difficult to see how they *can* be answered unless the numerical method brings into this humbler sphere that replacement of "vague adjectives" by "exact numerical standards" of which Simon spoke. The common "cold" has been termed the opprobrium of the profession; perhaps we have held our heads too high and dreamed too many bacteriological dreams, forgetting that the first word must be said before the last can be added.

It will be urged that we all have very decided opinions, grounded on our individual experiences, as to how each of these questions could be answered. So had our predecessors upon the topics of urban and rural mortality, upon the increase or decline of phthisis. But yet, as Simon pointed out, it really did require a Farr and the numerical method to produce anything like unanimity of opinion upon these matters. The Odes of Horace are better reading than the remarks of Cæsar on the Gallic wars, but it is well to read the Gallic wars before tackling Horace. No arithmetical averages, not even with their "probable errors" ground out to the last decimal and flanked with algebra of the most imposing unintelligibility, can be a substitute for the clinical researches of a Sir James Mackenzie; but they may serve as stepping-stones along a path which many have shunned and in which others have stumbled. The plain fact is that much the greater part of the clinical experience gained by each generation dies with its possessors. Much is in truth incommunicable; we profit very little, and can profit very little, from the mistakes of our fathers. But a residuum *is* communicable and has been lost because there has been no common medium of exchange.

A Ministry of Health Scheme.

A few months ago a committee appointed by the Minister of Health projected a scheme by means of which it was intended to make the communicable experience of all available to all. With the question whether the details of this scheme were good, bad, or indifferent we have here no concern. But the manner in which it was criticised, the principles of the opposition to it, revealed, as we think, a strange ignorance of the history of our art and of the means by which it has been improved. The historical importance of such men as Sydenham and Huxham was due to their determination to describe and record objectively the facts of their experience. "He strove," said Haeser, in the most discerning criticism of the English Hippocrates which has been produced, "not to discover mysterious arcana, but by the attentive observation of diseases, especially of the commonest sorts, to discern the nature of changes at the back of them, their being (Wesen), and by means of knowledge thus won to discover how to treat them."[10] But without the stepping-stones, the aids to clear thinking, which arithmetic affords the physician just as it does the statesman, these efforts fail. The medical officer of to-day finds Graunt more intelligible and helpful than most clinicians find Sydenham. Arithmetic, or even algebra, is a bad master, but it is a good servant. When this truth has been realised, the question of medical records will appear in better perspective and the possibility of clinical research, not for the gifted few alone, but for all, will be admitted.

[10] Geschichte der Medicin, vol. ii., p.

THE HORSLEY MEMORIAL.

THE organisation formed in November, 1920, to secure in permanent form the recognition of the life and work of Sir Victor Horsley has now published a third list of subscriptions, promised and received, as follows:—

	£	s.	d.
Mr. L. H. S. Scott	25	0	0
Dr. J. S. Risien Russell	21	0	0
Dr. Janet E. Lane-Claypon, Dr. Foster Kennedy (New York), Dr. Herbert Spencer, Dr. Charles Hamilton, Dr. G. G. Turner, Mr. Percy Flemming, Dr. N. S. Finzi, Sir William T. Lister, Mr. Bilton Pollard, Dr. L. Gordon Hopkins, Dr. J. H. Parsons, F.R.S., Dr. Dennis Embleton ... each	5	5	0
Mr. H. J. Spratt, Mr. John Dilloy ... each	5	0	0
Anonymous (per Dr. H. Batty Shaw), Dr. Hyde Marriott, Miss P. Whitaker, Professor T. R. Elliott, F.R.S., Dr. A. M. H. Gray, Dr. T. H. Ionides, Dr. G. E. Waugh, Dr. Amand Routh, Sir John Williams, Dr. R. H. Marten (Adelaide) ... each	3	3	0
Professor Winkler (Utrecht)	3	0	0
Dr. E. D. Davis, Dr. Byrom Bramwell, Dr. E. Deanesly, Mr. W. Gifford Nash, Sir E. Sharpey Schafer, Dr. H. C. G. Semon, Dr. A. G. Phear, Sir John Tweedy, Dr. J. H. E. Brock, Dr. A. J. Blaxland, Dr. B. B. Gadgil, Dr. F. G. Penrose ... each	2	2	0
Dr. Charles Brook, Professor W. W. Keen (Philadelphia), Dr. A. A. Lendon (Adelaide) ... each	2	0	0
Sir James Barr, Dr. J. J. Powell, Dr. Charles Smith, Dr. E. B. Ffennell, Miss Kirkaldy, Dr. Seymour Taylor, Dr. G. Hall, Dr. W. S. Sheldon, Dr. Howell Rees, Dr. D. Farnell, Dr. E. H. Young, Mr. E. A. Bullmore, Surgeon-Commander C. B. Fairbank, Dr. W. H. Paine, Dr. J. S. H. Roberts, Dr. S. Williams, Dr. O. P. Turner, Dr. C. D. Holdsworth, Dr. P. J. Le Riche, Dr. G. H. Hunter ... each	1	1	0
Miss M. Breay, Miss M. K. Longfield ... each	1	0	0
Miss M. Lord	0	5	0
Mrs. Pitt	0	2	0
Dutch Branch of International League against Epilepsy (per Dr. Muskens)	1	0	0
Society for the Prevention of Hydrophobia (per Mr. F. W. Fletcher)	5	5	0

The total acknowledged in previous lists is £606; these lists appeared in THE LANCET, 1921, Jan. 1st, p. 46, and Feb. 19th, p. 407.

Further subscriptions may be paid to either of the hon. treasurers, Sir Frederick Mott, K.B.E., Maudsley Neurological Hospital, Denmark Hill, S.E.5, and Dr. H. H. Tooth, C.B., C.M.G., 34, Harley-street, W.1, or to the hon. secretaries, Sir W. Arbuthnot Lane, Bart., C.B., 21, Cavendish-square, W.1, and Mr. Edward J. Domville, O.B.E., Symondsbury, Bridport.

URBAN VITAL STATISTICS.

(Week ended April 30th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 12·5 in each of the three preceding weeks, was again 12·5 per 1000. In London, with a population of 4½ million persons, the death-rate was 12·1, or 0·5 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 6·4 in Grimsby, 6·5 in Rhondda, and 7·3 in Northampton, to 19·4 in Barnsley, 20·4 in Oldham, and 21·8 in Dewsbury. The principal epidemic diseases caused 204 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 60 from infantile diarrhœa, 54 from whooping-cough, 40 from diphtheria, 33 from measles, 14 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1·1 in Newcastle-on-Tyne, 1·2 in Gateshead, and 1·4 in Barrow-in-Furness. There were 3255 cases of scarlet fever, 2453 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3307, 2564, and 0 respectively at the end of the previous week; the case of small-pox was admitted from Holborn. During the week ended April 23rd only 1 case of encephalitis lethargica belonging to Southwark was notified in the County of London. The causes of 27 of the 4460 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham and 3 in South Shields.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·1, 14·6, and 14·6 in the three preceding weeks, rose to 15·0 per 1000. The 321 deaths in Glasgow corresponded to an annual rate of 15·2 per 1000, and included 30 from whooping-cough, 6 from infantile diarrhœa, 2 each from scarlet fever and diphtheria, and 1 from enteric fever. The 123 deaths in Edinburgh were equal to a rate of 14·4 per 1000, and included 3 from diphtheria, 2 from measles, and 1 from infantile diarrhœa.

Correspondence.

"Audi alteram partem."

THE QUESTION OF A TRADE-UNION IN MEDICINE.

To the Editor of THE LANCET.

SIR,—Every right-minded practitioner must agree that a strike among medical men, involving the neglect of patients, is unthinkable. But there is another aspect of the subject which has, perhaps, been overlooked. Doctors are a State-protected body, and, that being so, have they the moral right to use the strike weapon? The police are not allowed to use it, and if the miners were to get their wish—State protection—the right to strike would have *eventually* to be taken from them. Eventually, for no Conservative, Liberal, or Coalition Government would be likely to pass such a measure; but when the Labour Government comes it will probably find itself obliged to do so. Russia has already found the necessity of such legislation. Would it not be a pity to have to wait for a Labour Government to teach us the difference between right and wrong?

I am, Sir, yours faithfully,

Keswick, May 1st, 1921. W. D. ANDERSON.

THE INTERNECINE VENEREAL CAMPAIGN.

To the Editor of THE LANCET.

SIR,—I have studiously abstained from controversy and have for several months past, as letters in my possession prove, been engaged in frank and friendly discussion both with Lord Willoughby de Broke, and other members of his Society, in an endeavour to end the schism that is doing much harm to the warfare against venereal diseases. I feel bound now to point out to the public that two things only hinder the progress of negotiations. First the sending of letters to the press by the same post as that by which they have been sent to me—a discourtesy which has twice taken place and makes frankness impossible; and secondly, and more seriously, the undeviating way in which the *Times* has given publicity to Lord Willoughby de Broke's Society, and suppressed—or most misleadingly summarised—the attitude of the National Council.

An instance of its partiality occurred on the publication of the report of the Bishop of Birmingham's Committee. This was at once described by the *Times* as the case of the Society for the Prevention of Venereal Disease, a parenthetical comment which the most prominent member of that Society admitted to me to be incorrect. An even worse instance has just occurred. The *Times* has quoted at length from a letter sent to me by Lord Willoughby de Broke, and has not quoted—and has never done other than very briefly and misleadingly summarised—the definition of the National Council's policy to which Lord Willoughby de Broke's letter was in reply. It has refused to publish the letter I at once wrote, even though I was drawing attention to action for which Lord Willoughby de Broke has subsequently expressed full and frank regret.

It is time that the public understood the reason; no one can be impartial on a matter he has already prejudged, and the "Medical Correspondent" of the *Times* who comes before the public anonymously as an impartial commentator is a member of Lord Willoughby de Broke's Executive Committee.

In these circumstances, I ask permission to state in your columns what I am refused permission to state in the *Times*—namely, that between the policy of the National Council, as defined at our general meeting on March 22nd, 1921, and that of Lord Willoughby de Broke's Society, there is now admitted to be but one real point of difference: that lies in the inability of the latter to accept the following sentences of our definition of policy:—

"Detailed official instructions as to the use of disinfectants in this connexion will, if issued to the public on sale with the disinfectants, not only have an appearance of official condonation but also lead to the assumption that such disinfectants are an official guarantee to the purchaser against contracting disease; moreover, such instructions, unless followed with scrupulous exactness after definite and personal tuition in their practice, may lead to an aggravation rather than a diminution of the incidence of these diseases."

Nevertheless, these sentences express not merely the truth, but the truth which is daily receiving greater recognition, and I have no doubt whatever, that even in spite of suppression and misrepresentation, truth will continue to prevail. I am even hopeful that Lord Willoughby de Broke, who has been frank and courteous throughout all our conversations, when allowed to speak through his own voice, will find the courage to shake himself free of the influences which are alone keeping the schism open, and so enable it to be harmoniously closed, to the great advantage of the campaign which we both have sincerely at heart.

I am, Sir, yours faithfully,

GORELL,
President, National Council for Combating
May 2nd, 1921. Venereal Diseases.

*** From an implied personality in this letter two reflections may arise. First, it is an assumption that "Our Medical Correspondent" in a lay paper is an individual. Secondly, a "correspondent" does not dictate the editorial policy of a journal.—ED. L.

THE TREATMENT OF DIABETES MELLITUS

To the Editor of THE LANCET.

"Be not the first by whom the new is tried,
Nor yet the last to cast the old aside."

SIR,—Pope's advice may be taken to apply to the medical practitioner. This letter is a plea to every practitioner not to be the last to cast aside the old treatment of diabetes mellitus by continuing to prescribe a diet of unlimited protein and fat. It is no easy matter to decide whether fat or protein in unlimited quantities is the more injurious, although there is little doubt that excessive fat ushers the young patient into the next world more rapidly than excessive protein, by causing an early and often fatal acidosis. Unlimited or excessive protein is more insidious in its action. The patient does not die rapidly, but the disease advances rapidly and a stage is reached in which the changes in the pancreas are so profound that treatment by alimentary rest and under-nutrition is rendered nugatory. The observations upon which statements are made should always accompany these statements. Shortly after adopting the Allen treatment of diabetes mellitus in 1915, I found that the cases which reacted best to the treatment were comparatively young people who had developed the disease recently, and that those who had been treated by the so-called Pavy treatment for months or years had very low tolerance for food in general; that is to say, that unless the amount of the carbohydrate, protein, and fat in the diet was very small, sugar persisted in the urine, the blood sugar was over 0·18 per cent., and the disease progressed. Still further, one received the impression that the patients who had adhered most strictly to the orders of their medical advisers to refrain from any food containing carbohydrate, and had taken large quantities of breads and biscuits made with protein, were the most refractory to treatment.

Clinical observation anticipated experimental evidence. Allen[1] recorded his observations upon dogs of the results produced by protein excess. He removed six-sevenths of the pancreas from a dog; for three days there was glycosuria without feeding. Upon a meat diet there was a heavy continuous glycosuria, and when this diet was maintained for some time it led to a condition which did not yield to a nine days' fast. Since the same observer has kept dogs alive for six years with no greater proportions of pancreas he concludes that "the downward progress observed in animals on excessive diets is purely the result of food injury; in other words, to functional over-stimulation of the pancreas as an endocrine organ." It is therefore

[1] The Journal of Experimental Medicine, May 1st, 1920.

clear that as soon as the diagnosis of diabetes mellitus has been established in a young subject a diet restricted in every way should be ordered, preparatory to making arrangements for estimating the optimum diet; and on no account should unlimited proteins be allowed either as meat or special breads, or in any other form, lest the excess of protein cause an inflammatory change in the pancreas, which materially diminishes the chance of prolonging the patient's life.

In my opinion, placing a young diabetic upon a diet with unlimited fat and protein is like treating an early case of carcinoma of the sigmoid with hyoscyamus—the symptoms may be alleviated for a time, but when intestinal obstruction occurs it is found that the growth has extended too far to permit of removal, and the patient's life can be prolonged only slightly. When a young diabetic is treated with unlimited protein the disease extends too, and upon the present-day treatment being adopted it is found that life can be prolonged only slightly. I am, Sir, yours faithfully,

Portland-place, W., April 29th, 1921. O. LEYTON.

THE HYGIENE OF THE SAILOR.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Jan. 25th, 1921, I have just read "The Hygiene of the Sailor," having previously read all your correspondent's reports in various sections dealing with this matter on some of the larger ships. Having spent six years at sea in 13 different steamship companies as ship surgeon, a few points not touched on may be of interest in connexion with the Mercantile Marine, dealing with not only the sailor, but the surgeon who looks after him. Possibly some of my "points" will reach the man with the "club," for only in this way is improvement to be attained.

First, with regard to the Board of Trade scale of drugs. This is quite antiquated. It only requires a practical man with sea experience in the tropics to discover its inadequacy. My suggestion is that a new scale should be prepared by medical men having sea experience.

Second, appointment of the ship surgeon. No man ought to be appointed till he can produce evidence of his fitness to carry out the duties of this post. This should be judged by (1) having held a post as house surgeon to a hospital; (2) previous shore surgical experience, as in a colliery district; (3) practice on land for a certain period; (4) the holding of a diploma in tropical medicine (if he is intending to travel East, West Indies, or South American ports).

Third, a ship surgeon's bureau. All intending ship surgeons should be compelled to register at a central bureau, which might be in London or Liverpool. At this office information as to medical qualifications, previous sea experience (if any), hospital appointments, and references from at least three independent sources as to moral character and ability would be available. This would to a definite degree eliminate the "wasters."

Fourth, on ships carrying wireless. A list of all surgeons on the various ships carrying wireless should be available by means of a printed slip given to the wireless operator of each ship. This list could easily be brought up to date at the beginning of each month. In this way one doctor could ring up the man he desired in an emergency, as has been done recently, with benefit to surgeon and patient.

Fifth, report as to surgeon's capability. At the conclusion of each voyage a report should be filled in by the commander as to the surgeon's medical capability, conduct, general character, and reliability.

Sixth, testimonials. All testimonials should be only obtained through the central bureau alone, and would in this way be of intrinsic value.

Seventh, inspection of ships prior to sailing. Inspectors should be appointed to visit all ships at the principal ports the day prior to sailing and inspect as in the following manner: (*a*) see if there is adequate supply of water to all baths and latrines throughout the ship; (*b*) inspection of all water carried for drinking purposes; (*c*) inspection of all water-pipes used for sanitary purposes; (*d*) visit all store-rooms for food, pantries, cabins, hospital, laundry, butcher's shops, looking into their sanitary condition and fitness for the purpose for which they are supplied; (*e*) overhaul all medical and surgical stores as to their sufficiency and good condition. Three reports should be made—one for the captain, one for the company, and one for the Board of Trade (that for the captain to be available for surgeon's inspection). By this means urgent requirements could be attended to at once, and those of less importance be dealt with on the return to the home port.

During my six years at sea I found that in every case, unless I had carried a small stock of drugs of my own, the supplies were quite inadequate. Testimonials were only given by the company, and were of such a stereotyped style that all real value was lost.

The urgent need of to-day is better accommodation for sailors and firemen. When one has to lay a man up on board ship, where does he go? If it is an urgent case, and one has the hospital, he goes there. In numbers of cases there is either no hospital accommodation or the case is not bad enough for that, and he is told to "go for'rard, and turn in." As Kipling has it, "Lord, what do they understand?" By "they" I mean directors, owners, and the man on top. The turning-in process takes place amidst the "odour" of meals, mixed (!) tobaccos, and the constant chatter of the last man off watch. Then comes the question of treatment. "Oh, anything will do for him." Have you heard this from the steward? No, but I have, and only by putting one's foot down was it possible to get what one ordered, or what the A.B. ought to have. Hygiene on broad lines is splendid, and ventilation a fine thing, but for the Lord's sake give the man in the fo'c'stle a place where he can have some recreation when he comes off watch, and a place where he can smoke without turning his sleeping quarters into a fourth-rate railway smoking compartment.

"We don't treat eyes." This from the superintendent of a large shipping company. And, again—"Oh, well, perhaps we may put one or two things in the ship the next time." This is no exaggeration, but actually occurred to me. "Want the hospital for a sick man, doctor? But I have several cases of literature in it, and what shall I do with them?" I replied, I hope fairly forcibly, that a sick man took precedence—and the hospital was cleared! I could give you many more instances of matters requiring reform, but perhaps the above will suffice.

I am, Sir, yours faithfully,

LEONARD L. BURTON,
Late Surgeon, Pacific R.M.S.P. Co., &c.

Dargaville, N.Z., March 8th, 1921.

*** In the Merchant Marine "the urgent need of to-day is better accommodation for sailors and firemen." Dr. Burton, in so saying, reasserts the principle which THE LANCET, knowing how bad were the conditions of life for the crews on board merchant ships, has been impressing on its readers. In the finer, newer ships better conditions are gradually being introduced. A mess-room, apart from the sleeping places, exists in the large Western Ocean Express steamers, for example, and in the *Achilles*. The want of hospitals on board, or "sick-bays" for the crew, is also being met, though medical officers are often faced by hesitations when they seek to have hospital cabins provided, which may mean sudden removal of stores or of unauthorised persons who have been allowed to occupy the available accommodation. Dr. Burton's claims on behalf of medical officers will awaken sympathetic vibrations in the memories of former ship surgeons, and could be fully met by the establishment of a Mercantile Marine Medical Department, composed of medical officers responsible to the Board of Trade first, to the companies afterwards. But this might be unpopular with doctors unwilling to bind themselves permanently to the sea, and the companies would much prefer to have their surgeons in the first place responsible to themselves. Dr. Burton's letter is the outcome of experience. His seventh point, the detailed inspection of a ship before sailing, may seem too far off for hope, but it is carried out on board every transport we have ever heard of, so there can be nothing impossible about its adoption.—ED. L.

MEDICAL COÖPERATION IN SHEFFIELD.

To the Editor of THE LANCET.

SIR,—I should like to add a few supplementary words to the interesting leading article in your issue of April 30th on "Insurance Practice and Research." In the first place, Professor J. B. Leathes holds the post of consulting physiologist, not only at the Royal Infirmary, as stated in your article, but also at the Royal Hospital. At each institution Dr. C. G. Imrie is in charge, under Professor Leathes, of the clinical physiological laboratories. This ensures identical conditions for students attending at either place. As

a matter of fact, all the four voluntary hospitals in Sheffield have for some time been united for purposes of clinical teaching under the control of a joint representative committee, and students of the medical faculty are allotted for various periods to each institution. Personally, I believe that this harmonious coöperation of the staffs of the four voluntary hospitals in connexion with the Faculty of Medicine has indirectly been a factor in leading up to the spontaneous and generous action of the Medical Panel Committee which you record. Just as your article shows that the clinician and the laboratory worker have found there is a mutual advantage in coming more closely together, so there have been, latterly, many signs, in this area at any rate, that the gulf which has for so long separated members of hospital staffs from general practitioners may soon be bridged over.

The generous action of the Medical Panel Committee of Sheffield has laid a solid foundation for one pier of the bridge, and with this excellent start I have no doubt whatever that the structure will soon be complete. If such a "rapprochement" between hospital staffs on the one hand and general practitioners on the other can be realised here, there is no obvious reason why it should not be realised elsewhere. When such a thing once comes about it will require but little more to acquire all that is of real importance in the Dawson Committee's findings, and practically at very little cost.

I am, Sir, yours faithfully,

University of Sheffield, May 2nd, 1921. ARTHUR J. HALL.

INTRAVENOUS INJECTION OF STIBENYL IN KALA-AZAR.

To the Editor of THE LANCET.

SIR,—Referring to my paper in THE LANCET of July 24th, 1920, entitled "The Intravenous Use of Acetyl-aminophenyl Salt of Antimony (Stibenyl) in the Treatment of Human Trypanosomiasis and Kala-azar," I have recently read[1] that severe and alarming symptoms have been reported from India following intravenous injection of the organic antimony compounds advocated for the treatment of kala-azar, and with which I obtained remarkable success in one particular case. In my own practice recently severe reactions—vomiting and diarrhœa—have ensued after the injection of 0·4 g. of these compounds.

I venture, therefore, to suggest that further trials should be made with the acetyl-*p*-aminophenyl salts of antimony in doses smaller than those originally advocated in my original paper—say, commencing with doses of 0·05 and 0·1 g. The explanation of this reaction in certain individuals is at present not forthcoming. I am of the opinion that a preparation of antimony, such as the acetyl-*p*-aminophenyl salt, will prove to be more specific for kala-azar than the potassium or sodium tartrates at present in use.

I might add that my name has been used in connexion with advertisements of these antimony compounds in the medical press without my knowledge or consent.—I am, Sir, yours faithfully,

PHILIP MANSON-BAHR.

Weymouth-street, W., April 28th, 1921.

TEACHING OF OBSTETRICS IN INDIA.

To the Editor of THE LANCET.

SIR,—At a recent meeting of the Punjab Legislative Assembly at Lahore, the medical budget was reduced by 4 lakhs of rupees, thereby cutting short the initiation of a scheme to improve the education of Indian students in midwifery. Opinions will no doubt differ, even among those interested in medical education, as to the wisdom or otherwise of the Assembly's action. The teaching of midwifery in India is beset with difficulties, and improvement is urgently needed in the interests of the medical profession. Indian women, like those of other Eastern countries, shrink from male attendance at the time of childbirth. The women of the country are practically all attended by untrained midwives, with a sprinkling of trained midwives and women doctors. Even those who consult male doctors freely enough at other times will not call him in for labour.

Under these circumstances it may be asked, Why train Indian students in midwifery? Because, in the first place, it is necessary if Indian degrees are to be registrable in the United Kingdom. Again, an Indian doctor is frequently called in to serious midwifery cases after all the efforts of the midwife to deliver have failed. He may be called on to deliver a transverse presentation, where the shoulder has been impacted in the pelvis for 48 hours, or a woman whose pelvis is so contracted that two fingers cannot be passed in. Handicapped already by the inconvenience of a small dark room, by lack of skilled help, and by the suspicion and disapproval of the patient's elderly female relatives, woe betide him if he also has no knowledge of midwifery! The Indian doctor is also frequently consulted by his male patients about their female relatives, and has to advise and prescribe for the ailments of pregnancy and the puerperium, even if he never sees the patient. Sometimes his fate is to sit for hours outside a labour room directing a case on the reports of a questionably qualified midwife. He is also sometimes required to attend European women at their confinements, and the fact that he is suspected often to be incompetent to do so is a source of great anxiety to the European community. If Indian medical men had better training and more practical knowledge of obstetrics there can be little doubt that maternity conditions in India, at present deplorable, would improve. At present Indian medical men as a body do little to secure their improvement.

Conditions as regards training in obstetrics differ in different parts of the country. In Madras there is a large Government Maternity Hospital, where thousands of children are delivered annually. Madras has a considerable Eurasian and low-caste population. There is much poverty, and a little money judiciously distributed among the patients has made it possible to organise this fine teaching institution, where both male medical students and midwives receive a good practical training. In Bombay and Calcutta also there are maternity hospitals with a number of cases varying from 1500 to 2000 annually, many of them abnormal. Many of the patients object to be examined by the male students, and so are relegated to the training of midwives.

The scantiness of the clinical material is shown by the fact that the universities require only six cases to be conducted before admission to examination, and to each case four students are allocated. There is nothing corresponding to the system in England by which medical students get a large part of their practical training in the homes of the poor, nor would such a system be possible in India. As one proceeds farther north prejudices become more acute, and in Lucknow and Lahore the labour cases treated in hospital are very few. In Lahore some years ago the medical students struck, and one of the causes of complaint was that students were frequently obliged to go up for the final examination without having seen a single case of labour. The authorities somewhat rashly promised to remedy this, and with that end in view it was proposed to build an up-to-date maternity hospital at Lahore and to offer money rewards to women who would enter it for delivery.

While all must sympathise with the legitimate aspirations of the students and the desire of the Government officials to provide a proper training, there will be many who agree that efforts on the part of Government to break down (in the interests of a small section) a domestic custom so rooted in the hearts of the people would be a dangerous matter. If the scheme were to be tried, it would surely be better to try it on a small scale in an existing ward and to build a special hospital only when the results had shown that practical success was certain to be attained. In the meantime it appears as if better use might be made of the material in the country. At present there is nothing to show whether an Indian medical man has any practical knowledge

[1] Mackie: Ind. Med. Gaz., February, 1921, vol. lvi., No. 2, pp. 76–77.

of midwifery or not. A special Licence of Obstetrics might be instituted in all the universities, open to those who had held resident posts in maternity hospitals or who could produce satisfactory evidence of having attended 100 cases of labour. Post-graduate scholarships might be offered by local governments and arrangements made to allow the holders of these certificates facilities in the larger maternity hospitals. Maternity homes might be opened in connexion with large Eurasian communities, and the holders of the post-graduate scholarships appointed as resident medical officers. In such communities even an externe maternity department might be possible. Holders of the L.O. would be picked men, useful as teachers in medical schools and for appointment to those stations where midwifery is an important item in the work.

In connexion with the education of the ordinary medical student more attention might well be paid to instruction in operative work with a dummy and preserved fœtus, and less stress laid on vaginal examination and on the witnessing of labour. It is these last items which form an insuperable barrier to most women who might otherwise enter a maternity ward. If a maternity ward were kept private, with an entirely female staff, and the male students were only allowed to enter it twice a week for the clinic, many more women would attend. The students would receive far more knowledge of midwifery from such clinics, which might include a good deal of abdominal examination of waiting cases, than they do from witnessing a case of labour at a distance in the midst of a crowd of men.

One thing is clear. European medical men introducing Western medicine in an Eastern country must be prepared to abandon details only suited to a Western environment, and to adopt new methods of teaching suited to the conditions found in the country if they are to attain the best possible results.

I am, Sir, yours faithfully,

April 4th, 1921. AUDAX.

*** This letter, received from a well-informed source in India, may be taken as supplementing the passage in our leading article of April 9th, in which we expressed the hope that the difficulty in obtaining sufficient obstetric experience for Indian students would not prove insurmountable.—ED. L.

"LIFE AFTER DEATH."

To the Editor of THE LANCET.

SIR,—The adjustment between concrete and abstract knowledge is ever taking place, and sometimes it is sufficiently active to create some sort of disturbance in our mental outlook. When this affects our lay population, as the fashionable "inquiry" into spiritualism is now doing—an aftermath of war and suffering—we become concerned as to the national sanity; when it appears in our scientific press, as the annotation on Life After Death in the issue of THE LANCET of April 23rd shows, we are made to realise that the purported happenings of spiritualism are left to only a few scientific men, and mainly to the mercies of laymen who do not understand the little we ourselves know of the subliminal or unconscious mind. Thus we are reminded that we are guilty of neglecting this means of studying the unconscious mind.

That these spiritualistic phenomena are most probably the reactions of the unconscious mind, capable itself of error and misdirection, most men versed in psychological findings will agree. But yet, as the atomic nucleus remains unknown in all but its mass and its radio-activity to the physicist, so does the unconscious remain equally unknown to the physician, who only knows those mental "radiations" manifested in his patient's dreams and in the storms of mental disease. The whole of the latent content of the mind remains, like the structure of the atomic nucleus, unknown. It seems, therefore, that the interest of these phenomena lies in the aspect they present in the study of the unconscious mind, and investigation should not be left to a small scientific group which may be in error, far less to lay amateurs, who are more liable still to erroneous deductions. The student of the unconscious must remember that certain of its units of memory, the "images lying dormant" in the unconscious,[1] or the bases of the pyramids of memory complexes (Freud), are most apt to be revived in, and taken up from, the sitter by a psychic medium during certain mental states, and that it is the demonstration of this knowledge acquired by the medium that is so liable to startle, convince, and lead astray anyone who sets himself the task to unravel the problem.

It has been stated by responsible men that the unconscious can be definitely excluded as an explanation of these manifestations; but this seems illogical; for it is impossible to exclude an entity as the cause of an effect while having only a limited knowledge of that entity, and this is more so in mental physics than elsewhere. For all we know the phenomena of "materialisation" may be the result of conscious or unconscious falsification on the part of the medium. On the other hand, it must be admitted that all our knowledge of reality is based on instinctive pre-knowledge—a property of the unconscious; further, we know that the events that follow the formation of a retinal image in our fields of vision and their relations to the objects that cause the stimulus, are subjected to a process of unconscious coördination so that we do not get an inverted and diplopic view of the external world. It seems that even our conception of external reality is guided and coördinated by the unconscious.

I am, Sir, yours faithfully,

April 30th, 1921. M.D.

THE DIET OF THE WEANLING.

To the Editor of THE LANCET.

SIR,—The diet of the weanling is a subject of immense importance, but, unhappily, one concerning which disastrous ignorance prevails in this country.

Reference has been made in your correspondence columns concerning the amount of milk the weanling requires. Sir, the weanling requires no milk whatever. It amazes me that this elemental truth is not taught in our medical schools. Pure milk, whether from the cow, goat, mare, or ass, is a good enough food in moderation from the time of weaning to the end of the chapter, but—it is not essential.

Another truth all but wholly overlooked in this country: the diet of the growing human from the time of weaning onwards should be such as shall enable the jaws to grow sufficiently to allow the whole 32 permanent teeth to take up their proper position without jamming. So to feed our youth as not to allow the masticatory apparatus to develop normally is to rob them of their birthright, of what, indeed, is more truly their birthright than any gift which can be bequeathed by testament. A due appreciation of this truth would do more to improve the health of the community than all the team-work carried on at our medical centres is likely to achieve in the next half-century. I say this while fully appreciating the good which is likely to accrue from this movement.

So absorbed are we in the investigation of the obscure that we are in some danger of overlooking the glaringly obvious.

I am, Sir, yours faithfully,

Wimpole-street, W., April 30th, 1921. HARRY CAMPBELL.

[1] Cf. Jung: Collected Papers on Anal. Psych., 2nd ed., pp. 374, 410.

LIVERPOOL MATERNITY HOSPITAL.—The annual meeting of this hospital was held on April 28th in the Town Hall, the Lord Mayor presiding. The annual report showed an increase in the number of patients, the hospital having been full the whole year; many cases had to be refused for lack of accommodation. During the year 27 women medical students and 68 men students took their midwifery practice at the hospital. Eighty-two pupil midwives took the prescribed course of training, and 77 of these were successful in passing the examination of the Central Midwives Board. Sir William Hartley's generous offer of £25,000 and a site for a new hospital has been accepted, and the Board is about to raise additional funds to set about building this hospital. On the year's workings there is a deficit of £1044, and the committee is anxious for increased contributions.

Obituary.

HENRY EDWARD JULER, F.R.C.S. ENG.,

CONSULTING OPHTHALMIC SURGEON, ST. MARY'S HOSPITAL.

Mr. Henry Juler, whose death on April 23rd, from pneumonia, was recorded last week, was the son of Dr. H. C. Juler, a Suffolk practitioner, and received his medical education at St. Mary's Hospital, London, where he held in succession the appointments of demonstrator of anatomy, medical registrar, and medical superintendent. After post-graduate study in Paris and Berlin, he decided to devote himself to ophthalmic work, and was appointed clinical assistant to the Royal London Ophthalmic Hospital. At the same time he started practice in Wimpole-street, with the usual early struggles, which ultimately gave place to a very large practice in Cavendish-square. On his appointment to the staff of the Royal Westminster Ophthalmic Hospital, where was at that time abundant clinical material but no systematic teaching, he set himself with customary energy to remedy this and, with the assistance of his colleagues, laid the foundation of a successful school of ophthalmology. In 1884 he was appointed to the ophthalmic staff of St. Mary's Hospital as junior to Sir Anderson Critchett, whom he subsequently succeeded. It was then that he became deeply interested in the pathological side of ophthalmology, many of the specimens prepared by him being now in the museum of the Royal College of Surgeons of England.

Juler was not a prolific writer, but his "Handbook of Ophthalmic Science and Practice" went through three editions and is still widely read here and in America. His Harveian lectures on Syphilitic Diseases of the Eye and its Appendages, delivered in December, 1897, were a judicious blend of accurate clinical and pathological observation, and his occasional contributions to medical societies were as much concerned with the basis of disease as with its manifestations. The same attitude is apparent in an introductory address to students delivered at St. Mary's Hospital in 1893.

Two of Mr. Juler's friends and contemporaries have sent us an intimate account of his life and work, which may be quoted:—

Juler was a man of untiring energy and enthusiasm, both in his work and in his recreation. He was a familiar equestrian figure in Hyde Park in the early morning, educating his children in horsemanship. He rode fearlessly, not without occasional accidents, and his cheeriness of disposition carried others with him in sports and pastimes. His operative skill and dexterity were accompanied by a sympathetic consideration for the patient's trouble which made him very popular as a consultant. Early in the war he lost his younger son, who was in the first Expeditionary Force, a blow from which he never quite recovered. Previous to this he had resigned his hospital appointments, but returned to work at the Westminster Ophthalmic Hospital during the period of stress.

For the last two years he had been gradually retiring from practice, his elder son succeeding to his work. His loss is felt by a large circle of patients and friends, and much sympathy will be extended to his widow, surviving son, and three daughters.

DEATH OF DR. ARTHUR F. DOBBS, OF ATHLONE.—Great regret is felt both in his own neighbourhood and in Dublin at the death of Dr. Arthur Dobbs, one of the leading practitioners of the Irish midlands. He had been overworked for years past, but had remained at his post. On April 20th he entered on his duties as usual, but felt ill in the course of the morning, and died in the afternoon. For many years he had practised in Athlone, and was held in respect and affection by all classes of the community. With a deep sense of the responsibility of professional work, he not only attended to his patients with the most scrupulous care, but as time permitted he kept in touch with modern knowledge by constant study and by post-graduate courses.

DEATH OF DR. F. H. PICKIN.—Frederick Harold Pickin, M.R.C.S. Eng., late Captain, R.A.M.C., who died suddenly on his birthday, April 28th, at the age of 45, received his medical education at the London Hospital and at Bristol, where he held resident appointments at the General Hospital. After qualifying in 1903, he was appointed assistant surgeon at All Saints Hospital, London, where his interest in urinary diseases began. His contributions to medical literature included a paper on A Routine Method of Examination in Gonorrhœa in the Male as a Guide to Treatment, which appeared in THE LANCET, 1913, i., 76. At the time of his death he was hon. surgeon to out-patients at St. Paul's Hospital for Skin and Genito-urinary Diseases.

THE LATE DR. W. H. WOODGER.—William Hawkley Woodger, who died suddenly on April 23rd at his residence in Newcastle-on-Tyne, was a well-known medical practitioner in that city. Educated at the University of Durham, he obtained the triple Scottish qualification in 1905, and immediately entered into general practice at Newcastle. During the war he was employed on active service in Egypt, where he contracted malaria, from which he never fully recovered. He leaves a widow and three sons.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon-Lieutenants to be Surgeon Lieutenant-Commanders: J. C. Sinclair and H. L. P. Peregrine.

Surg. Lieut. (D.) A. T. Dally to be Surgeon Lieutenant-Commander (D.).

ROYAL ARMY MEDICAL CORPS.

Capt. E. Catford relinquishes the acting rank of Major.

Temp. Capt. G. J. McGorty to be Captain.

Lieutenants (temporary Captains) to be Captains: A. R. Barlas and E. N. P. Martland.

E. C. Fawcett, late temporary Captain, to be temporary Captain.

Officers relinquishing their commissions: Temp. Major R. A. Beaver (retains the rank of Major). Temp. Capt. F. L. Dickson. Temporary Captains retaining the rank of Captain: J. Joule, W. Spiteri, G. Fleming, E. Bryceson, H. R. McNair, J. Crean, E. S. Joske, T. H. Jackson, and W. D. Perry. Temporary Lieutenants retaining the rank of Lieutenant: S. E. Price and W. A. Byrn.

ARMY DENTAL CORPS.

To be Majors: Temp. Majors W. T. Finlayson (from R.A.M.C.) and A. K. Macdonald (Dental Surgeon, from Special List), and Temp. Capt. (acting Major) J. A. Seymour (Dental Surgeon, from General List). Dental Surgeons to be Captains: Temp. Capts. R. H. Bebb (from General List), A. B. W. Rust (from General List), E. Smith (from General List), A. B. Austin (from Special List), R. H. Mills (from Special List), and E. R. Saul (from Special List): A. F. Salsbury (from temporary Major, Special List).

OVERSEAS FORCES.

South African Medical Corps.—Temp. Capt. G. S. Coghlan relinquishes his commission on completion of service, and retains the rank of Captain.

TERRITORIAL FORCE.

Capt. (acting Major) E. Osborne relinquishes the acting rank of Major on ceasing to be specially employed.

Capt. F. D. Marsh, from 1st Southern General Hospital, to be Captain.

D. J. Davies to be Lieutenant.

DEFENCE FORCE.

To be temporary Majors: C. Walker, B. Addensbrooke, C. B. Baxter, S. J. C. Holden, and L. R. Colledge. To be temporary Captains: A. Morris, C. H. Comerford, J. Morham, W. George, A. C. H. McCullagh, S. J. Clegg, B. E. A. Batt, H. Wilson, W. Tresawna, J. Grant-Morrin, O. H. Mavor, J. A. Stenhouse, H. L. Garson, A. Walker, H. K. Ward, E. Scott, and F. J. Morris. To be temporary Lieutenant: A. Fisher.

4th London (D.F.) Field Ambulance:—To be temporary Lieutenant: C. C. Coghlan.

5th London (D.F.) Field Ambulance:—To be temporary Major: E. T. H. Lea.

6th London (D.F.) Field Ambulance:—To be temporary Captains: J. Rowland and J. O. Thomas. To be temporary Lieutenant: L. Samuels.

1st East Anglian Field Ambulance:—To be temporary Lieutenant-Colonel: H. F. Everett. To be temporary Captains: W. J. Rice, H. V. Walsh, C. S. Stadden, and W. S. Forbes.

Sanitary Section:—To be temporary Captain: G. T. Stewart.

1st South Midland Field Ambulance:—To be temporary Lieutenant-Colonel: W. Stobie.

3rd (Home Counties) Field Ambulance (D.F.): —To be temporary Lieutenant-Colonel:—H. G. G. Mackenzie.

2nd (West Lancs.) Field Ambulance (D.F.):—To be temporary Lieutenant-Colonel: G. C. E. Simpson.

3rd (West Lancs.) Field Ambulance (D.F.):—To be temporary Major: A. J. D. Riddett.

2nd West Riding Field Ambulance (D.F.):—To be temporary Major: T. R. Kenworthy. To be temporary Captain: D. F. Dobson.

3rd West Riding Field Ambulance (D.F.):—To be temporary Major: E. F. Skinner. To be temporary Captains: R. A. Stark, W. T. D. Mart, and R. E. Pleasance.

2nd (Wessex) Field Ambulance (D.F.):—To be temporary Lieutenant-Colonel: C. M. Kennedy.

3rd (Wessex) Field Ambulance (D.F.):—To be temporary Lieutenant-Colonel: E. Alderson.

ROYAL AIR FORCE.

The undermentioned are granted temporary commissions as Flight Lieutenants: C. P. Barber, J. F. P. Gallagher, H. C. E. Quin.

Capt. G. M. Mellor is transferred to the unemployed list.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, MAY 3RD.

PUBLIC HEALTH (TUBERCULOSIS) BILL.

THE Earl of ONSLOW (Parliamentary Secretary of the Ministry of Health), in moving the second reading of the Public Health (Tuberculosis) Bill, said that the deaths from tuberculosis during the past six years were as follows:—1915, 54,295; 1916, 53,858; 1917, 55,734; 1918, 58,073; 1919, 46,312; 1920, 42,545. The drop in the figures in the last two years was mainly due to the valuable services rendered by the county councils in combating disease, and afforded proof of the immense gain to the nation through their work. The number of beds provided for tuberculosis patients by the local authorities and voluntary institutions had increased since 1912 from 4300 to 17,447.

Lord STRACHIE said that, on the whole, the county councils were fairly satisfied with the Bill, and were obliged to the Ministry of Health for the way in which they had considered many amendments they had suggested. They approached the Bill in no hostile spirit. The feeling at the meeting of the County Councils Association was that as the Bill made sanatorium treatment compulsory on the county councils the obligation to pay for the same should also be compulsory.

The Earl of ONSLOW said that the Government had promised to find £300,000 to reimburse the councils plus a further grant this year of £1,000,000. It was the fixed and firm policy of the Government to continue this institutional treatment of tuberculosis.

Lord SYDENHAM asked whether the figures mentioned by the noble lord represented the maximum annual expenditure under this bill.

The Earl of ONSLOW said that the block grant might be regarded as final, but the £200,000 depended on the amount that the councils spent on the approved schemes each year.

Lord HARRIS protested against the enormous charge which was being thrown on the rates for this purpose. The treatment of tuberculous people was a national object and their cure was a national advantage. Why, then, should such a very large proportion of the cost be thrown on the rates? Why should it not be 25 per cent. on the rates and 75 per cent. on the Exchequer?

The Bill was read a second time.

HOUSE OF COMMONS.

THURSDAY, APRIL 28TH.

Grouping of Medical Appeal Boards.

Mr. WATERSON asked the Minister of Pensions whether there had been any joining together of medical appeal boards; if so, for what purpose; and under what powers such had been done.—Mr. MACPHERSON replied: The answer to the first part of the question is in the negative. Perhaps my honourable friend has in mind an administrative arrangement by which, in certain large areas, a number of boards may be grouped for supervision under one Deputy Commissioner of Medical Services, each board, however, retaining its own chairman.

University Students and Defence Force.

Mr. RENDALL asked the Secretary for War what action he intended taking on the letter received from Sir I. Owen, Vice-Chancellor of the University of Bristol, which pointed out the importance of university students being released from the Defence Force at the earliest possible moment.—Sir CHARLES OMAN asked the Secretary for War whether he would take measures to secure the prompt demobilisation of those university students who were still retained by their colonels in the battalions of the Defence Force, when the large majority of such persons had been granted leave to return to their studies and examinations, as cases of great hardship were being reported by university authorities.—Sir L. WORTHINGTON-EVANS replied: It is not possible to give leave to students from the Defence Force without at the same time giving leave to others who may desire it on urgent grounds. It is hoped, however, that the present negotiations will lead to a speedy settlement, when steps will be taken to demobilise the Defence Force.

Medical Equipment of Auxiliary Division, R.I.C.

Lieutenant-Colonel WALTER GUINNESS asked the Chief Secretary to the Lord Lieutenant of Ireland whether the Auxiliary Division, Royal Irish Constabulary, were still entirely without medical staff or ambulances; and whether, in view of the very dangerous work and heavy casualties which their units were now sustaining, he would consult the Director of Medical Services as to the advisability of attaching to each company one motor ambulance, one medical non-commissioned officer, and two medical orderlies.—Sir H. GREENWOOD replied: As stated by my right honourable friend, the Attorney-General (Mr. Henry), in reply to a question on this subject on April 14th, the Auxiliary Division is not provided with its own special medical transport, but ambulances and other necessaries of medical equipment are borrowed from the Regular Forces as and when required. I have inquired into the working of this arrangement, and am assured that it is found to answer satisfactorily, as the whereabouts of neighbouring military stations are well known and can be communicated with easily in the event of casualties occurring.

Supervision of Private Vaccine Farms.

Mr. HAYDAY asked the Minister of Agriculture whether his department exercised any supervision over the private vaccine farms in this country in which vaccine lymph was manufactured, having regard to the fact that at least two outbreaks of foot-and-mouth disease in the United States of America had been attributed by the authorities to the use of contaminated vaccine lymph on private vaccine farms.—Sir. A. BOSCAWEN replied: The Ministry exercises no supervision or control over private vaccine farms in this country in which vaccine lymph is manufactured. I may add that the Ministry has inquired into hundreds of outbreaks of foot-and-mouth disease in this country since the report from the United States of America was published, but in no case has any evidence been obtained that foot-and-mouth disease has ever been introduced into Great Britain through the medium of vaccine lymph.

Proposed Reduction of Government Medical Staff.

Major Sir KEITH FRASER asked the Minister of Health what necessity there was for having increased the number of medical men on the public health staff in the direct service of the Government from 39, who performed the functions under the Local Government Board in 1914, to 100, at present employed by the Ministry of Health, at an annual cost which was increased from £26,871 15*s.* 9*d.* in 1914 to £130,630 3*s.* in 1920; and whether he proposed to take any steps to reduce the numbers and cost.—Sir A. MOND replied: I am inquiring into the functions and numbers of the medical branch of the Ministry, and pending the result of the inquiries have given instructions that no vacancies arising in the medical branch are to be filled.

Educational Food Leaflet.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Health when it was proposed to issue the educational food leaflet, the draft of which was submitted early in March, with a memorial on this subject from medical, scientific, health, and other associations; and would he deal with the matter as one of urgent importance, having regard to the present general distress and the consequent necessity for disseminating knowledge of healthy, nourishing, and economical foods.—Sir A. MOND replied: The matter is receiving attention and I will see whether any useful purpose can be served by issuing any such pamphlet.

Protection against Small-pox.

Mr. FREDERICK GREEN asked the Minister of Health, in view of the statement contained on page 219 of the annual report of the chief medical officer of the Ministry for the year 1919-20 that cases of small-pox did not occur after recent successful re-vaccination, how recent re-vaccination should be in order to be absolutely protective; and what were the characteristics represented by the word successful.—Sir A. MOND replied: I am advised that the protection against small-pox infection by efficient vaccination is practically absolute during the early years following the operation and that in the great majority of cases the protection remains effective up to the tenth or eleventh year after vaccination. The evidence of successful vaccination is the production at the seat of inoculation of the characteristic lesions followed by well-defined marks.

MONDAY, MAY 2ND.

The Spahlinger Treatment.

Mr. HIGHAM asked the Prime Minister whether he would consider the advisability of appointing a commission to investigate at once the merits of the Spahlinger treatment for consumption, particularly in view of the fact that 18 persons were treated in England with this serum in 1913-14 when they were in the third degree of consumption, and to-day these persons were well and able to carry on their former occupations; and whether, in view of this fact and also that 40,000 people died of consumption annually in this country, he would consider it desirable to exhaust every means in his power to secure the Spahlinger treatment for this country so that it might be available to all people suffering from consumption in any of its stages.—Sir A. MOND (Minister of Health) replied: I may remind my honourable friend that the question of the merits of the Spahlinger treatment for consumption have been under

consideration by the responsible medical authorities in this country since 1914; and during the last few months the Ministry of Health, following their usual practice of investigating the efficacy of all new methods of treatment for tuberculosis which are brought forward, have given further special attention to the matter at the particular request of Mr. Spahlinger. The difficulty in the case is, however, that the serum itself and reliable details of the clinical evidence in support of its use are not forthcoming. An undertaking has, however, been given that when supplies of this serum become available for independent and scientific investigation in this country the Ministry of Health will facilitate an exhaustive examination of its efficacy. The appointment of a commission as suggested by my honourable friend would not therefore appear to be of any advantage at the present time. I think it desirable to emphasise that in the opinion of my medical advisers there is not yet available a sufficient body of evidence to justify the claims made for this treatment.

Cost of the Ministry of Health.

Mr. MILLS asked the Minister of Health if he would submit a return showing the total expenditure defrayed out of national funds in respect of each of the administrative sections under the control of his department during each of the last two completed financial years, and also the estimated similar expenditure in respect of the current financial year.—Sir A. MOND replied: I am not quite clear what the honourable Member has in mind. If, as I assume to be the case, he refers to grants made by the department out of voted moneys towards the cost of housing, national health, insurance, and miscellaneous health services, the information is as follows:—

	Expenditure.		Estimated expenditure.
	1919-20	1920-21	1921-22
	£	£	£
Housing	24,109	3,145,888	 11,000,000
National Health Services ...	6,596,456	7,713,704	 8,500,000
Miscellaneous ,, ,, ...	777,142	2,451,059	 3,000,000

Indian Medical Service Appeals.

Major GLYN asked the Secretary for India whether British officers of the Indian Medical Service had any right of appeal if the contention was upheld that such officers had no right of appeal under Section 42 of the Army Act, and with special reference to the notification in the *London Gazette* of March 15th, p. 2099; and, if so, by what procedure they could appeal.—Mr. MONTAGU replied: I am advised that officers of the Indian Medical Service have no right of appeal under Section 42 of the Army Act, but have a right of appeal to the Governor-General under Section 180 (2) (d) of that Act. If dissatisfied with his orders they may then appeal to the Secretary of State for India, and through him to H.M. the King.

Small-pox and Vaccination.

Mr. ROBERT YOUNG asked the Minister of Health if his attention had been called to the following figures relating to the cases of small-pox notified in 1919—namely, 294—as shown on pages 34 and 39 of the First Annual Report of the Minister of Health, and pages 27 and 241 of the Annual Report of the Chief Medical Officer for 1919-20; 288, as shown on page 215 of the last-named Report; and 361, as shown on page lxviii. of the Registrar-General's Annual Report; if he would state the reason for these differences and say what was the total number of cases notified or discovered in 1919, and how many of those cases occurred amongst each of the civilian, military, and naval sections of the population, and how many in port sanitary districts; and how many deaths occurred in each of these sections.—Sir A. MOND replied: The figure 288 shown on page 215 of the Annual Report of the Chief Medical Officer of the Ministry for 1919-20 is the total number of cases of small-pox notified under the Infectious Diseases (Notification) Act during 1919. Twenty-three of these cases were afterwards withdrawn on the ground of incorrect notification, and 29 cases were discovered in the civilian population which had not been notified. The figure 294 shown on pages 34 and 39 of the first Annual Report of the Minister of Health, and on pages 27 and 241 of the Annual Report of the Chief Medical Officer, which is arrived at by adding 29 to the figure 288 and deducting 23 therefrom, is the actual number of cases of small-pox occurring in the civilian population during 1919. Of these cases 38 occurred in port sanitary districts. In addition, 13 military and 4 naval cases occurred in this country, and 50 service men arrived in this country convalescent from small-pox incurred abroad. The figure 361 shown on page lxviii. of the Registrar-General's Annual Report is arrived at by adding these 50 cases to the total number of civilian, naval, and military cases which occurred in this country. The number of deaths was 25 in the civilian, 4 in the military, and none in the naval sections of the population.

Mr. LUNN asked the Minister of Health how many deaths from small-pox had occurred amongst children under 5 years of age in each year since the passing of the Vaccination Act, 1907; and how many deaths of children under 5 years of age in each of those years had been certified by the doctor in attendance as having been caused by, or associated with, the operation of vaccination.—Sir A. MOND replied: The particulars asked for, according to the Registrar-General's Returns so far as England and Wales are concerned, are as shown in the following table:—

Deaths of Children Under 5 Years of Age.

Year.	Small-pox.	Vaccination.*	Year.	Small-pox.	Vaccination.*
1908	1	13	1915	2	7
1909	1	11	1916	3	2
1910	2	8	1917	—	6
1911	5	15	1918	—	3
1912	2	9	1919	2	6
1913	1	7	1920	5	19
1914	1	5			

* Certified by doctor to have been caused by, or associated with, vaccination.

Mr. CHARLES WHITE asked the Secretary for Scotland how many deaths from small-pox had occurred in Scotland amongst children under 5 years of age in each year since the passing of the Vaccination Act, 1907; and how many deaths of children under 5 years of age in each year had been certified by the doctor in attendance as having been caused by, or associated with, the operation of vaccination.—Mr. MUNRO replied: The answer to the first part of the question is 28, of whom 27 were unvaccinated and 1 vaccinated. The answer to the last part of the question is 6.

BOOKS, ETC., RECEIVED.

APPLETON, D., AND CO., London and New York.
Gynecological and Obstetrical Tuberculosis. By Charles C. Norris, M.D. Pp. 356.
Cesarean Section. By Prof. Franklin S. Newell. Pp. 210.
Menstruation and its Disorders. By Emil Novak, M.D. Pp. 357.
Extra-Uterine Pregnancy. By Edward A. Schumann, M.D. Pp. 189.
Pelvic Inflammations in Women. By Prof. John Osborn Polak, M.D. Pp. 229. Five vols. will be issued in August; 10 vols. complete, £10 10s.

BARTH, A., Leipzig.
Handbuch der Arztlichen Erfahrungen im Weltkriege. 1914-1919. Band VIII. Pathologische Anatomie by Ludwig Aschoff. Pp. 590. M.170.

DAVIS, F. A., COMPANY, Philadelphia.
Eye, Ear, Nose, and Throat Nursing. By Prof. A. E. Davis and Prof. B. Douglass. 2nd ed. Pp. 346. $2.50.
Rational Treatment of Pulmonary Tuberculosis. By C. Sabourin, M.D. Authorised English translation from the 6th French ed. Pp. 440. $5.50.

HARRISON AND SONS, London.
Transactions of the Medical Society of London. Vol. XLIII. Edited by Donald Armour, F.R.C.S., and W. H. Willcox, M.D. Pp. 291.

HEINEMANN, W., London.
A Text-book of General Pathology for the Use of Students and Practitioners. By J. M. Beattie, M.D., and W. E. C. Dickson, M.D. 2nd ed. Pp. 496 + xlv. 31s. 6d.

JOHNS HOPKINS PRESS, Baltimore.
Diagnosis of Protozoa and Worms Parasitic in Man. By Associate Professors R. W. Hegner and W. W. Cort. Pp. 72.
Hospital Reports, Vol. XX., Fasc. 1, pp. 147, and plates; Vol. XX., Fasc. 2, pp. 249, and plates; Vol. XXI., Fasc. 2, pp. 156, and plates.

KIMPTON, HENRY, London.
Clinical Surgery by Case Histories. By Prof. A. E. Hertzler. Vol. I., Head, Neck, Thorax, and Extremities. Pp. 546. Vol. II., Diseases of the Abdominal and Genito-urinary Organs. Pp. 547-1106. £5 complete.

LIBRAIRE FÉLIX ALCAN, Paris.
Traumatismes Cranio-Cérébraux (Accidents Primitifs, Leurs Grands Syndromes). Par Prof. H. Duret. Vol. II., Pt. 1, pp. 800; Pt. 2, to pp. 1357. Fr.150, 2 vols.

LONGMANS, GREEN, AND CO., London.
The Electronic Conception of Valence and the Constitution of Benzene. By H. S. Fry, Ph.D. Pp. 300. 16s.

MASSON ET CIE, Paris.
Manuel de Coprologie Clinique. Par le Dr. J. Ch. Roux. Pp. 383. Fr.12
Chirurgie de Guerre et D'après-Guerre. Par Prof. A. Broca. Pp. 479.

SCIENTIFIC PRESS, LTD., London.
A Handbook for Nurses. By J. K. Watson, Capt., R.A.M.C. 6th ed. Pp. 770. 10s. 6d.

SPRINGER, JULIUS, Berlin.
Das Sputum. Von Prof. Dr. H. von Hoesslin. Pp. 398. M.148.
Konstellationspathologie und Erblichkeit. Von Dr. N. Ph. Tendeloo. Pp. 32. M.8.60.

UNIVERSITY OF CHICAGO PRESS, Chicago.
The Origin and Development of the Nervous System from a Physiological Viewpoint. By Prof. C. M. Child. Pp. 295.

Medical News.

UNIVERSITY OF CAMBRIDGE.—**At a Congregation** held on April 29th the following degrees were conferred:—

M.D.—C. R. Taylor, Caius.
M.B. and B.Ch.—P. F. Bishop, Clare.
M.B.—E. H. H. Granger, Clare.
B.Ch.—H. B. Dodwell, Emmanuel.

UNIVERSITY OF LONDON: *Election of Senate.*—The semi-general election has resulted in the appointment of the following medical men as members of the Senate for the period 1921–25: Sir Wilmot Herringham (R.C.P. Lond.), Mr. Raymond Johnson (R.C.S. Eng.), Mr. H. J. Waring (Faculty of Medicine), Dr. G. N. Pitt (City and Guilds Institute), and Dr. E. G. Graham Little (Convocation).

The Graduation Dinner.—On account of the present industrial crisis and the necessity for saving coal and light, the University authorities were compelled to cancel the graduation dinner fixed for yesterday evening, Thursday, May 5th. In order to mitigate the disappointment which this decision will necessarily cause, the Prince of Wales consented to attend a reception at the Guildhall during the afternoon, when the manuscript given by the graduates and undergraduates of the University was presented to His Royal Highness.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on April 28th, Sir Norman Moore, the President, being in the chair. The following were admitted to the *Membership* of the College: Dr. James B. Alexander, Dr. George Ashton, Dr. Percy S. Blaker, Dr. John A. M. Bligh, Dr. Loswel I. B. Braun, Dr. Ernest A. Broughton, Dr. George S. Buchanan, Dr. Ruth E. Conway, Dr. Arthur J. Eagleton, Dr. Ernest G. Ffrench, Dr. Charles B. Heald, Dr. Godfrey T. Hebert, Dr. Arthur H. Holmes, Dr. Alice M. Hutchison, Dr. Henry W. Jones, Dr. John W. Linnell, Dr. Charles C. Okell, Dr. Dona'd H. Paterson, Dr. Miles K. Robertson, Dr. James A. Shorten, Dr. James C. Spence, Dr. Ernest B. Verney, and Dr. Cecil C. Worster-Drought.—Licences to practise Physic were granted to 103 candidates who had passed the required examinations and conformed to the by-laws and regulations.

Diplomas in Tropical Medicine and Hygiene were granted, jointly with the Royal College of Surgeons, to the following candidates: John O. Beven, Francis Xavier Costello, Andrew Crawford, John P. de Silva, William M. Howells, Annie M. Mackay, Charles T. Maitland, Mary Martin, Malcolm Morrison, Parasurama Parthasarathy, Robert A. W. Procter, Benoy Kumar Ray, Henry E. S. Richards, Mona M. Ross, Chuni Lal Sahni, Douglas S. Scott, Jacob Segal, Lolitmohan Sen, Pran Nath Seth, Robert G. Simpson, and Herbert Smith.

The following were elected to the *Fellowship* on the nomination of the Council: Dr. Charles O. Hawthorne, Dr. Arthur J. Cleveland, Dr. Charles H. Melland, Dr. Joseph G. Emanuel, Dr. Frank H. Jacob, Dr. Alfred E. Barnes, Dr. John P. Hedley, Dr. James A. Torrens, Dr. Alfred J. Clark, Dr. Anthony Feiling, Dr. Robert H. Steen, Dr. Charles McMoran Wilson, Dr. George E. S. Ward, and Dr. John B. Leathes.

Sir Norman Moore was unanimously re-elected a Representative of the College on the General Medical Council, and Sir Wilmot Herringham was re-elected a Representative of the College on the Senate of the University of London.—The following schools were recognised for instruction in chemistry and physics: Christ's Hospital, Horsham; Handsworth Technical School, Birmingham; and Ipswich High School for Girls. Leicester Municipal Technical School was recognised for Instruction in Biology, and the South London Hospital for Women was recognised for the gynæcological clerkship. It was resolved to admit licentiates in medicine and surgery of King Edward VII. Hospital Medical School, Singapore, to the Second and Final Examinations.—After some formal College business had been transacted the President dissolved the Comitia.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination of the Conjoint Examining Board, held from April 5th to 25th, the following candidates were approved in the under-mentioned subjects, but are not eligible for diplomas:—

Medicine.—S. Adler and D. R. Ainsworth, Manchester; W. Beaumont, London; Lorna Phœbe Brown, Univ. Coll.; E. M. Burrell, Cambridge and St. Thomas's; Christabel L. M. Charlesworth, King's Coll.; J. C. Churcher, St. Thomas's; C. S. Cloake and E. C. T. Clouston, London; C. L. Cottle, Glasgow and Liverpool; Nancy M. Coutts, Royal Free; P. T. Davidson, Middlesex; H. K. Denham, Oxford and St. Bart.'s; E. C. Dodds, Middlesex; T. W. K. Dunscombe, Durham; E. S. Etheridge, Univ. Coll.; J. C. Evans, London; H. Finklestone, Sheffield; Betty Fletcher, St. Mary's; J. Franks, London; E. St. C. Gainer, Middlesex; L. D. Gorton, Birmingham; A. Gullertein, London; A. H. Hall, Birmingham and London; Marjorie C. Hawkins, Westminster; A. D. Hepburn, Cardiff and Westminster; R. J. Hodgkinson, Guy's; Marjorie Browning Hubert, St. Mary's; A. Ismail, Dublin; E. R. Jagger, Manchester; Erna Henrietta Jebens, Royal Free; D. J. Jones, Westminster; A. M. Khaleel, Middlesex; A. Kotbi, St. Mary's; W. E. Lloyd and D. M. Lloyd-Jones, St. Bart.'s; D. McClean, St. Thomas's; J. F. C. McColl, Liverpool; A. Mande, Manchester; Enid M. Moore, St. Mary's; Rose Moss, Charing Cross; R. E. Murray, Calcutta; E. R. D. Nagel, St. Thomas's; V. L. Parmar, King's Coll.; V. D. Pennefather, London; B. T. Richards, Birmingham; W. G. Roberts, Liverpool; A. Robertson, Guy's; T. Seschachalam, Madras and London; H. Shannon, St. Bart.'s; A. H. Shelswell, Guy's; S. S. Shri-Kent, Liverpool; S. R. Simaika, St. Bart.'s; H. K. Snell, King's Coll.; A. D. Soares, Bombay; A. Sourasky, Leeds; Dorothy Mary Stewart, St. Mary's; L. W. Studdy, Durham; Muriel Amy Sutton, Univ. Coll.; J. G. Tait, Edinburgh; Wenefride Thompson, St. Mary's; Doris Lyne Veale, Royal Free; J. G. Walker, Charing Cross; L. R. A. Wells, Guy's; E. T. Wright, St. Mary's; and J. E. Wright, Guy's.

Midwifery.—N. A. Aiengar, Guy's; O. A. Akjaly, Liverpool; V. H. Barker, London; Marjorie M. S. Bartlett, St. George's; A. W. Brown, Cambridge and St. Bart.'s; Lorna Phœbe Brown, Univ. Coll.; Margaret H. Burrows and Linda Catmur, London; R. B. Chandrachud, Guy's; Christabel L. M. Charlesworth, King's Coll.; A. J. Chiappa, Middlesex; J. C. Churcher, St. Thomas's; W. E. R. Coad, Toronto; W. E. Cody, St. Bart.'s; Muriel Coope, Manchester; J. M. Craig, Dundee and St. Mary's; G. C. W. Curson, Guy's; K. A. Darukhanawala, Middlesex; J. B. Devine, King's Coll.; J. H. Doggart, Cambridge and St. Thomas's; H. S. Drabble, Sheffield; Winifred M. Edghill, Manchester; Doris Emery, Royal Free; F. T. Evans, St. Bart.'s; A. Farid, Guy's; W. E. Farnham, Birmingham; Ena Dorothy Foster, St. Mary's; N. Gallant, London; G. L. Gately, Liverpool; Kate Glyn-Jones, London; L. D. Gorton, Birmingham; E. F. Griffith, St. Mary's; F. Guiver, London; C. M. Gwillim, St. Bart.'s; J. F. Hackwood, St. Thomas's; T. H. J. Hargreaves, Charing Cross; Muriel M. Harris, King's Coll.; S. G. Harrison, St. Bart.'s; S. Hartley, St. Thomas's; I. Hipshon, Leeds; R. V. Hudson, Middlesex; A. B. Isaacs, St. Thomas's; Erna Henrietta Jebens, Royal Free and St. Mary's; A. O. Jones, Liverpool; R. G. Karn, Univ. Coll.; Kathleen H. B. King, Royal Free; G. B. Kirkland, Guy's; D. H. J. Kirton, Birmingham; Emilia B. M. Krause, London; D. M. Lloyd-Jones, St. Bart.'s; Eva Lombard, Geneva; Geraldine N. Longford and Muriel J. Lough, St. Mary's; F. Q. McKeown, Liverpool; Frances Mary Margerison, Charing Cross; A. Mitchell, King's Coll.; Enid M. Moore, St. Mary's; J. N. Morris, King's Coll.; D. C. Muir, Middlesex; J. Ness-Walker and W. H. Nettlefield, St. Bart.'s; J. B. Oldham, Liverpool; A. E. Parkes, St. Bart.'s; V. L. Parmar, King's Coll.; D. H. Patey, Middlesex; V. D. Pennefather and Ruth E. Pilgrim, London; Mary W. Pitt-Lewis, St. Mary's; J. H. Porter, Univ. Coll.; Enid M. Powell, Charing Cross; F. L. Rayner, Guy's; J. G. Reed, St. Thomas's; P. D. Richards, St. Bart.'s; W. G. Roberts, Liverpool; A. R. Rutnam, Middlesex; T. A. S. Samuel, London; I. A. Senanayeke, Univ. Coll.; T. Seshachalam, Madras and London; K. E. Shellshear, St. Bart.'s; S. S. Shri-Kent, Liverpool; G. H. T. Stovin and R. S. Swindell, London; E. J. Targett, Birmingham; Marjorie P. Taylor, Charing Cross; N. S. Taylor, Liverpool; Wenefride Thompson, St. Mary's; C. A. Wells, Liverpool; B. W. Williams, St. Thomas's; D. H. Williams, London; and S. J. Woodall, Manchester.

Surgery.—F. C. W. Capps, St. Bart.'s; R. B. Chandrachud, Guy's; L. E. Claremont; Univ. Coll.; I. J. Corbett, London; J. M. Craig, Dundee and St. Mary's; E. Cuerel, Lausanne; E. C. Dodds, Middlesex; T. W. K. Dunscombe, Durham; A. H. El-Ramli, Liverpool; F. T. Evans, St. Bart.'s; R. A. Fanous, Manchester; E. Gallop, St. Bart.'s; P. P. Gandhy, St. Mary's; M. Hall, Guy's; A. V. Johnson, Cambridge and Birmingham; K. W. Leon, St. Bart.'s; A. Livingston, Liverpool; R. Mikhail, Charing Cross; J. N. Morris, King's Coll.; H. W. L. Nichols, London; H. A. Osborn, King's Coll.; L. S. Perera, London; G. W. Phillips, Liverpool; A. I. Silverman, Middlesex; S. R. Simaika, St. Bart.'s; Muriel Amy Sutton, Univ. Coll.; D. R. Thompson, London; D. L. Veale, Royal Free; A. Verwey, Leiden and St. Bart.'s; and W. H. Williams, Charing Cross.

ROENTGEN SOCIETY.—**The Manchester meeting of** this Society, announced for May 6th and 7th, was postponed owing to the coal strike.

POST-GRADUATE COURSE OF INSTRUCTION IN TREATMENT OF VENEREAL DISEASES.—A two weeks' course for qualified medical women, arranged by the London (R.F.H.) School of Medicine for Women, the Royal Free Hospital, the Elizabeth Garrett Anderson Hospital, and the London Lock Hospital, will begin on Tuesday, May 17th, at 10 A.M., with an introductory lecture on "Some Aspects of the Venereal Problem," by Mr. J. E. R. McDonagh, at 8, Hunter-street, London, W.C. The Ministry of Health recognises attendance at this course as qualifying the medical practitioner who has pursued it to receive free drugs for treatment. The course will consist of visits to and demonstrations in various departments of the three hospitals under the direction of Miss Margaret Basden, Dr. Margaret Rorke, Mr. Charles Gibbs, Dr. Ruth Balmer, Dr. David Thomson, Mr. J. Ernest Lane, Mr. J. E. R. McDonagh, and Mr. J. Johnston Abraham. Fees for the full course, £5 5s., payable on entry. The library, refectory, and common rooms at the London (R.F.H.) School of Medicine for Women are available for use by the post-graduate students attending the course. Qualified medical women wishing to attend are asked to send in their names not less than seven days before the course begins to Miss L. Brooks, at 8, Hunter-street, London, W.C.1.

THE King has sanctioned the promotion of Lieutenant-Colonel L. N. Robinson, C.B.E., R.A.M.C., to Knight of Grace, and the appointment of Captain E. B. Allnutt, M.C., R.A.M.C., to Esquire in the Order of St. John of Jerusalem in England.

GUILD OF BLIND GARDENERS.—A project for the useful and healthy employment of the labours of the blind, entitled the Guild of Blind Gardeners, was brought before the Oxford Ophthalmological Congress in 1919, and met with warm sympathy. The Guild will be inaugurated on May 26th at the National Library for the Blind, 18, Tufton-street, Westminster, and medical men who are interested should communicate with Mrs. Duncombe, president of the Guild, 1, Stafford Mansions, Buckingham Gate, London, S.W.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES. The annual dinner will be held at the Café Royal, Regent-street, London, on Thursday, May 26th. The chief guest will be Dr. Addison, M.P., in recognition of the services which he has rendered, in circumstances of exceptional difficulty, as first Minister of Health. Sir Alfred Mond, M.P., the Minister of Health, will be present, as also will members of the medical group in Parliament, and other guests. Those wishing to attend are requested to make early application to the general secretary, 5 Vere-street, London, W. 1, for tickets, price 12*s.* 6*d.*, exclusive of any wine taken. Extra tickets are available for private guests, whose names, together with remittances, should accompany all applications.

NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES.—A conference is to be held at the Caxton Hall, Westminster, London, S.W., on Tuesday, May 10th, at 3.30 P.M., for the purpose of hearing reports from the three Commissions which recently returned from the Far East, the West Indies, and the Mediterranean. The meeting will include representatives from Government departments interested in home and colonial health and industrial administration, from mercantile marine associations and shipping firms, and from commercial houses trading with the places visited by the Commissions. Speakers will include Lord Gorell, President of the Council; the Earl of Onslow, Parliamentary Secretary, Ministry of Health; Hon. E. F. L. Wood, M.P., Parliamentary Under Secretary of State for the Colonies; Lieutenant-Colonel L. S. Amery, M.P., Financial Secretary, Admiralty; Mr. D. Bramah, of the Seafarers Joint Council; Dr. Rupert Hallam, Medical Commissioner to the Far East; Dr. Letitia Fairfield, Educational Commissioner to the West Indies; Dr. Winifrid Cullis, Educational Commissioner to the Mediterranean; and Dr. A. F. Wright, M.C., Medical Commissioner to the West Indies. The meeting will be open to the public. Tickets obtainable from the Secretary of the Council at 80, Avenue Chambers, London, W.C. 1.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—The annual meeting of this Society was held on April 16th at Armitage Hall, Great Portland-street (by permission of the National Institute for the Blind). The report of the council was presented by Sir Cooper Perry, the chairman, who said that during its nine months' of existence the Chartered Society had done much work. The Examinations, Training, and Registration, Establishment and General Purposes, Finance, Journal, and Badge Committees had met twice monthly and their various recommendations to council showed that a variety of important matters had received careful deliberation. Requirements for training and for examination had been set out; provisional conditions for entry to registered membership and to additional registers had been publicly announced; an insurance scheme to meet the needs of professional workers was available; lectures and special courses have been given, and arrangements were already in hand for a conference of members to be held in the autumn. The appointments bureau had since July, 1920, supplied 185 members with work. Ten examinations had been carried out by the Chartered Society of Massage and Medical Gymnastics, and 1426 certificates granted. The Chartered Society had appointed representatives to the Massage Advisory Committee (Ministry of Pensions), the British Federation of Medical and Allied Societies, the National Council of Women Workers, and the Federation of Professional Women. The registered membership on March 31st was 2655, consisting of 2464 masseuses and 191 masseurs. The numbers on the additional registers on March 31st were as follows: medical electricity, 677; medical gymnastics, 304; teachers of medical electricity, 38; teachers of medical gymnastics, 39. The effect of Red Cross massage clinics for the treatment of civilian cases on those in private practice was discussed and will be further investigated. It was announced that members of the Chartered Society were to be eligible for membership of the Cowdray Club attached to the College of Nursing.

HARVEIAN SOCIETY.—A clinical meeting of this Society will be held at the Paddington Infirmary, Harrow-road, W., on Thursday, May 12th, at 4.30 P.M. Programme will be found in our Medical Diary.

GLASGOW UNIVERSITY CLUB, LONDON.—The annual summer dinner will be held on Friday, May 27th, in the Holborn Restaurant, Professor F. O. Bower, F.R.S., in the chair.

LIVERPOOL SAMARITAN HOSPITAL FOR WOMEN.—This hospital was founded 25 years ago, and in 1920 there were 7100 attendances and 764 operations. The accommodation has become inadequate, and it is proposed to erect a new hospital building. For this purpose the committee has in hand a sum of £12,163. The proposed new premises are designed to occupy a site bounded on the north by Upper Parliament-street, on the west and south by Lestock-street, and on the east by the Windsor-street Municipal Library. The front will face the end of the cathedral. The out-patient department will open into Lestock-street, and there will be an entrance in Upper Parliament-street for stretcher cases. On the main floor there will be two general and three private wards, an administrative department, and dining- and recreation-rooms for the nurses. On the upper floors will be general wards, private wards, up-to-date theatres, and staff rooms. In the general wards there will be accommodation for 62 patients, and, in addition, there will be eight private wards. The building is to be constructed of rustic brick and Portland stone, and will harmonise in design and style with the eighteenth-century houses in Rodney-street and neighbourhood.

NORFOLK AND NORWICH HOSPITAL.—This hospital has adopted a scheme for attempting to raise funds which presents some novel features. It is calculated that the excess of expenditure over income amounts roughly to £250 a week. A system of payment by patients (both in and out) was started on Jan. 1st this year, and this is found to work most satisfactorily, bringing in an average of £60 a week. The hospital almoner reports that on the whole patients are quite willing to contribute towards the cost of their maintenance and treatment. The workmen's contributory scheme has also been extended, and the most recent suggestion for increasing the revenue of the hospital is that known as the "county parish scheme," according to which each parish in the county is asked to accept the responsibility which properly belongs to it. As a guide to the amount required from each parish, the expenditure of the hospital has been divided amongst the population who might be expected to contribute, and the sum arrived at is 2*s.* 3*d.* per head for each parish. This amount could be made up from various sources, such as private subscriptions, workmen's contributions, church collections, &c. This appears a good method of appealing to all persons in the county of Norfolk who are liable at any time to apply for the benefits of hospital treatment and good results are hoped for.

DONATIONS AND BEQUESTS.—Alderman James Fildes, of Bowdon, Cheshire, a member of the City Council, Manchester, and for many years chairman of the Public Health Committee, by will bequeathed nearly £13,000 to local charitable institutions, including £2000 to Manchester and Salford Boys' and Girls' Refuges and Homes, £1000 each to Manchester Hospital for Skin Diseases, Royal Infirmary, Manchester and Salford Sick, Poor, and Private Nursing Institution, Manchester City Mission, and three other institutions; and £500 each to the Manchester Surgical Aid Society, Hospital for Consumption and Diseases of the Throat, Henshaw's Blind Asylum, Royal Eye Hospital, and several other local institutions.—St. Mary's Hospitals, Manchester, have received donations from the Hospital Saturday Fund of £905, and from Booth's charities and other sources the sum of £150.—The Manchester Royal Infirmary has received a donation of £1716 from the Manchester and Salford Hospital Saturday and Convalescent Homes Fund, and about £210 from various employees and firms, and from legacies.—By will the late Alderman James Bracebridge Hilditch, of Richmond, Surrey, left £1000 to his wife for any worthy object such as the cure and benefit of the wounded in the war. Among bequests under the same will are £4000 to the Chelsea Hospital for Women towards the building fund, £1000 to the Hospital for Consumption and Diseases of the Chest, Brompton, £2000 to the Royal Hospital, Richmond, £1000 to Dr. Barnardo's Homes, £1000 to the Richmond branch of the Red Cross Society for a benevolent fund for nurses employed at the Star and Garter Hotel, and £100 each to the Richmond Dispensary, London Fever Hospital, Poplar Hospital for Accidents, Royal Hospital for Incurables, Putney, City Dispensary, British Homes for Incurables, and Society for the Prevention of Cruelty to Children.

ANCOATS HOSPITAL, MANCHESTER.—The ninety-second annual report, which has just been issued, states that despite the increase of ordinary income from £8841 in 1914 to £20,237 in 1920 the deficit on the ordinary receipts and expenditure for the past year was £7339, and the institution now owes upwards of £16,000 to its bankers.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. A. Abrahams, Lond.; *Answers*, Lond., Editor of.
B.—Sir J. R. Bradford, Lond.; Dr. G. Blacker, Lond.; British Spa Federation, Harrogate, Hon. Sec. of; Mr. W. Boulton, Lond.; Mr. C. W. G. Bryan, Lond.; Prof. Bolk, Amsterdam; Dr. H. W. Barber, Lond.; Mrs. C. Brereton, Lond.
C.—Miss C. Cowdroy, Lond.; Dr. R. B. Carslow, Glasgow; Cambridge and Paul Instrument Co., Lond.; Messrs. Carters, Lond.; Chicago School of Sanitary Instruction; Cassel Hospital for Functional Nervous Disorders, Lond., Committee of; Dr. M. Cockerell, Letchworth; Dr. H. Campbell, Lond.; Dr. F. G. Chandler, Lond.; Dr. R. Cannon, Vinar del Mar, Chili.
D.—Dorland Agency, Lond.; Mrs. A. Duncombe, Lond.; Prof. G. Dreyer, Oxford.
E.—Equitable Life Assurance Society, Lond.; Dr. W. McA. Eccles, Lond.
F.—Federation of Medical and Allied Societies, Lond., Gen. Sec. of; Mr. W. A. Frost, Forest Row; Messrs. Fenton, Russell, and Co., Edinburgh.
G.—Dr. A. Withers Green, Lond.; Mr. G. H. C. St. G. Griffiths, Gibraltar; Prof. E. E. Glynn, Liverpool; Mr. F. B. Gilbreth, Montclair.
H.—Mr. E. T. Heys, Stockport; Capt. T. B. Harden, Rhyl; Harveian Society, Lond., Sec. of; Harrogate Royal Baths, General Manager of; Miss L. Hobinstock, Lond.; Prof. A. J. Hall, Sheffield; Dr. A. Hodgson, Lond.; Holborn Surgical Instrument Co., Lond.; Mr. C. E. Hecht, Lond.; Dr. G. A. Harrison, Lond.
I.—Industrial Welfare Society, Lond.; Insurance Committee of the West Riding of Yorkshire, Wakefield, Chief Tuberculosis Officer of.
J.—Dr. R. C. Jewesbury, Lond.; Mr. F. Juler, Lond.; Mr. G. Jessel, Preston.
K.—Mr. G. L. Keynes, Lond.; Dr. W. H. Kesteven, Kingston Hill; King Edward's Hospital Fund for London; Messrs. Kegan Paul and Co., Lond.; Dr. W. N. W. Kennedy, Croydon.
L.—Dr. C. Lillingston, Gorleston-on-Sea; London Hospital Medical College; London (Royal Free Hospital) School of Medicine for Women, Warden and Sec. of; Liverpool Medical Institution; Dr. H. A. Lediard, Carlisle; Dr. O. Leyton, Lond.
M.—Dr. P. Manson-Bahr, Lond.; Ministry of Health, Lond.; Ministry of Finance (Statistical Dept.), Cairo; Dr. A. Macphail, Lond.; Meteorological Office, Air Ministry, Lond.; Dr. S. G. Moore, Huddersfield; Dr. C. F. Marshall, Lond.; Dr. R. W. MacKenna, Liverpool; Chartered Society of Massage and Medical Gymnastics, Lond.
N.—Lord Northampton, Lond.; National Council for Combating Venereal Diseases, Lond.
O.—Official Medical History of the War, Lond.; Dr. J. S. Owens, Lond.; Ophthalmological Congress of the United Kingdom, Sec. of.
P.—Messrs. G. P. Putnam's Sons, Lond.; Dr. H. R. Prentice, Lond.; Dr. E. Pritchard, Lond.; Mr. L. Pickin, Lewes; Mr. W. H. Plows, Lond.
R.—Sir L. Rogers, Lond.; Royal Sanitary Institute, Lond., Sec. of; Radium Institute, Lond.; Mr. S. H. Rylett, Lond.; Royal Institution of Great Britain, Lond.; Rontgen Society, Lond., Hon. Sec. of; Prof. S. Russ, Lond.; Royal Society of Arts, Lond.; Royal College of Veterinary Surgeons, Lond., Sec. of.
S.—Prof. W. Stirling, Manchester; Savoy Hotel, Lond., Directors of; Société des Sciences Médicales et Biologiques de Montpellier; Scottish Board of Health, Edinburgh; Society for the Propagation of the Gospel in Foreign Parts, Lond.; Dr. S. H. Stewart, Whiteabbey; Mr. A. Smith, Lond.; Dr. R. Samut, Sliema, Malta.
T.—Mr. E. B. Turner, Lond.
W.—Dr. R. L. M. Wallis, Lond.; West London Post-Graduate College; Mr. A. J. Walton, Lond.; Dr. F. J. Waldo, Lond.; Mr. T. E. Wallis, Lond.; Dr. E. W. A. Walker, Lond.; Dr. J. D. Wynne, Norwich; Prof. F. Wenckebach, Vienna.
Y.—Dr. R. A. Young, Lond.
Z.—Zoological Society of London, Sec. of.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2 2 0
	Six Months	1 1 0
	Three Months	0 10 6
ABROAD	One Year	£2 10 0
	Six Months	1 5 0
	Three Months	0 12 6

Subscriptions may commence at any time, and are payable in advance. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423 Strand, London, W.C. 2.

ADVERTISEMENT RATES.

Books and Publications ... ... } Four Lines and under... ... 6s. 0d.
Official and General Announcements
Trade and Miscellaneous Advertisements ... ...

Every additional line, 1s. 6d.
Quarter Page, £3. Half a Page, £6. Entire Page, £12.
Special Terms for Position Pages.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 9th.

WAR SECTION: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Paper: Surg.-Commander S. F. Dudley, R.N.: A Few Observations on the Influenza Epidemic as it affected the Royal Navy.

Tuesday, May 10th.

SECTION OF PSYCHIATRY: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.

Wednesday, May 11th.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Informal Discussion introduced by the President.

Thursday, May 12th.

SECTION OF NEUROLOGY: at 8.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Paper: Professor Marinesco (Bukarest): Encephalitis Lethargica (communicated by Sir Frederick Mott).

Friday, May 13th.

CLINICAL SECTION: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.

SECTION OF OPHTHALMOLOGY: at 8.30 P.M.
Exhibits (at 8 P.M.):
Mr. B. T. Lang: (1) Test Types; (2) Daylight Lamp.
Papers:
Dr. D. Leighton Davies: Lacrymal Obstruction—the Results of the Anastomotic Method of Treatment. (Toti.)
Mr. Ernest Clarke: Lessons Learnt from 40 Years of Refraction Work.
Miss J. C. Mann: Specimen of Aphakia in a Human Embryo of 5 or 6 weeks.

HARVEIAN SOCIETY OF LONDON, at the Paddington Infirmary, Harrow-road, W.
THURSDAY, May 12th.—4.30 P.M., Clinical Meeting. The following Cases will be shown:—(1) Cases of Multiple Bone Disease—(*a*) Carcinoma, (*b*) Osteomyelitis, (*c*) Rickety Deformities; (2) Actinomycosis (Thoracic); (3) Osteo-arthritis of Hip (after Albée Operation); (4) Epithelioma of Ear; (5) Tuberculosis of Skin; (6) Gonococcal Septicæmia; (7) Case of Graves's Disease; (8) Cases for Diagnosis. Dr. M. Berry: Lantern Demonstration of X Ray Plates. Dr. H. Dutch: Demonstration of Aurorascope.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, May 9th.—Opening of the Summer Session. 12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards. 5 P.M., Lecture:—Mr. B. Harman: The Education of Children with Defective Vision.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 5 P.M., Lecture:—Mr. B. Harman: Blind and Partly Blind Children.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Addison: Operations. Mr. D. Armour: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Owen: The Treatment of Nephritis. (I.)
THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. Baldwin: Orthopædic Department. 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards. 5 P.M., Special Lecture:—Dr. E. S. Reynolds: Some Vascular Lesions of the Brain (open to all medical practitioners).
FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. 2 P.M., Dr. Burnford: Medical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Demonstration of Cases (Medical Wards). 5 P.M., Lecture:—Dr. Snowden: Psychical Analysis.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.
Daily:—10 A.M. Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.
MONDAY, May 9th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Dr. Saunders: Pituitary Disorders.
TUESDAY, May 10th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. James Taylor: Epilepsy.
THURSDAY, May 12th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Tooth: Disseminated Sclerosis.
FRIDAY, May 13th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M. Lecture:—Dr. Collier: Aphasia.
Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.
TUESDAY, May 10th.—10.30 A.M., Demonstration XI., The Training (1) of the Motor Functions of the Digestive System, (2) of the Heat Regulating Functions, &c.
THURSDAY.—3 P.M., Demonstration XII., The Feeding of Children between 9 Months and 2 Years.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.
Courses of Lectures:—
A Course of Fourteen Lectures on Pvscho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.
TUESDAY, May 10th.—5.15 P.M., Lecture III.:—The Unconscious.
FRIDAY.—5.15 P.M., Lecture IV.:—Suggestion.
Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.
A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.
THURSDAY.—4.30 P.M., Lecture I.

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.
A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.
TUESDAY, May 10th.—4.30 P.M., Lecture II.:—Prof. M. S. Pembrey: The Secretion of Milk.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.
A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.
FRIDAY, May 13th.—5.15 P.M., Lecture II.: Suggestibility and Authority; Phantasy and Reality.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.
A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.
THURSDAY, May 12th.—4.30 P.M., Sir James Mackenzie: The Opportunities of the General Practitioner are Essential for the Investigation of Disease and for the Progress of Medicine.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY, May 10th.—3 P.M., Lecture IV.:—Prof. A. Keith: Darwin's Theory of Man's Origin (in the Light of Present Day Evidence).
THURSDAY.—3 P.M., Lecture:—Dr. C. S. Myers: Pyschological Studies—(II.) The Appreciation of Music.
FRIDAY.—9 P.M., Discourse:—Mr. W. Bateman: The Determination of Sex.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, May 10th.—4.30 P.M., Lecture:—Prof. G. R. Murray: Treatment of Diseases of the Endocrine Glands.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
Special Course of Lectures in Gynæcology.
WEDNESDAY, May 11th.—11 A.M., Demonstration Operations.
THURSDAY.—4.30 P.M., Lecture V.:—Dr. A. C. Magian: Malignant Disease of the Uterus.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CORFIELD, C. R., M.D. Brux., L.M.S.S.A. Lond., has been appointed Medical Officer to Swinton and Pendlebury and Stalybridge Ante-natal Clinics.
DARLOW, F., M.B., Ch.B. Vict., Certifying Surgeon under the Factory and Workshop Acts for Horsforth.
HIRSCH, Capt. C. T. W., late R.A.M.C., Honorary Anæsthetist to the West End Hospital for Nervous Diseases.

Vacancies.

For further information refer to the advertisement columns.

Abergavenny, Monmouthshire Asylum.—Jun. Asst. M.O. £400.
Adelaide University.—Professor of Zoology. £1100.
Bath, Royal Mineral Water Hospital.—Res. M.O. £250.
Bedford County Hospital.—Asst. H.S. £150.
Bethlem Royal Hospital, Lambeth-road, S.E.—Jun. Asst. P. £350.
Birmingham City Education Committee.—Anæsth. £200.
Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £200.
Buxton, Derbyshire, Devonshire Hospital.—H.P. £250.
Cambridge, Addenbrooke's Hospital.—H.S. £150.
Cardiff City and Port Education Authority.—M.O.H. and Chief M.O. £1200.
Colchester, Essex County Hospital.—H.S. £200.
East Islington Infant Welfare Centre.—Lady Doctor. 1½ gs. per session.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. S. and Hon Surg. Reg.
Hackney Union Infirmary.—Sen. Asst. M.O. £571 19s. 2d.
Hampshire County Council.—Asst. M.O.H. £719.
Holloway Sanatorium, Virginia Water, Surrey.—Jun. Asst. M.O. £400.
Hong-Kong, Port Health Officer.—Sec. Health O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—Radiographer. Also Asst. in Venereal Dept. £200.
Inverness District Asylum.—Asst. M.O. £300.
Kettering and District General Hospital.—Res. M.O. £250.
Kingussie, N.B., Grampian Sanatorium.—Locum.
Leamington Spa, Warneford, Leamington, and South Warwickshire General Hospital.—Res. H.P. £200.
Liverpool.—Asst. Port M.O. £700.
Liverpool, Bootle Borough Hospital, Derby-road.—Hon. S.
Llanelly Borough.—Female Asst. M.O.H. and Asst. Sch. M.O. £500.
London County Council Industrial School for Boys, Highbury-grove, N.—M.O. £153.
London Temperance Hospital, Hampstead-road, N.W.—Ophth. S. and Asst. S.
Manchester County Asylum, Prestwich.—Locum Tenens. £8 8s. per week.
Manchester Royal Infirmary.—Res. M.O. £250. Also Res. Surg. O. £250.
Manchester, St. Mary's Hospitals for Women and Children.—Asst. M.O. £100.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—Anæsth.
Middleton-in-Wharfedale Sanatorium, Ilkley.—Asst. Res. M.O. £325.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150. Also M.O. for X Ray Dept. £75.
Mount Vernon Hospital for Tuberculosis and Diseases of the Lungs and Heart, 7, Fitzroy-square, W.—Asst. S. Also Asst. Res. M.O. £200.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—M.O. in charge of Electro-Therapeutic Dept. £100. Also Res. M.O. £200.
Nottingham City Education Committee.—Jun. Asst. Sch. M.O. £537 10s.
Oswestry, Shropshire Orthopædic Hospital.—H.S. £250.
Portsmouth Royal Hospital.—H.S. £150.
Preston and County of Lancaster Royal Infirmary.—H.S. £180.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.
Queen Mary's Hospital for East End, Stratford, E.—Cas. O.
Rotherham Hospital.—Jun. H.S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £200. H.S. £50. Obstet. H.S. £50. Res. Asst. Cas. O. £50.
Royal Naval Medical Service.—Surg.-Lieuts. 26s. 6d. per diem.
Royal Waterloo Hospital for Children and Women, S.E.—Hon. P. and Hon. Gynæcol.
St. Bartholomew's Hospital.—Asst. P.
S. George's Home, Milman's-street, Chelsea, S.W.—Part-time Visit. Asst. M.O. £200.
Sheffield City.—Asst. Tubere. O. £350.
South Mimms, Barnet, Clare Hall Sanatorium and Hospital.—Asst. M.O. £350.
Taunton and Somerset Hospital.—Sen. and Jun. H.S.'s. £200 and £150.
West Bromwich and District Hospital.—Res. Asst. H.S. £200.
Wigan Education Committee.—Female Asst. Sch. M.O. £500.
Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450. Also Jun. Asst. M.O. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Wath-on-Dearne, Mullingar, and Evesham.

Births, Marriages, and Deaths.

BIRTHS.

O'CONNOR.—On April 29th, at a nursing home, Clifton, the wife of Major A. P. O'Connor, M.C., R.A.M.C., of a daughter.
VICKERS.—On April 28th, at Rosslyn, Uxbridge, the wife of Harold Vickers, M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

LANKESTER—YOUNG.—On April 28th, at the Brompton Parish Church, S.W., Ralph A. R. Lankester, M.D., to Constance Nevill, eldest daughter of the late Charles Young, of Alton, Hants, and Mrs. Young, of Camberley.
MCCLOGHRY—ACHESON.—On April 29th, at Christ Church, Leeson Park, Dublin, Colonel J. McCloghry, F.R.C.S.I., Indian Medical Service (retired), to Hilda Sara Shaw, daughter of G. Acheson, J.P., Rushill, County Roscommon.
SMITH—GLYNNE.—On April 26th, at Princes-road Presbyterian Church, Bangor, Dr. Malcolm Smith, of Bangkok, Siam, to Dr. Eryl Glynne, elder daughter of Mr. and Mrs. Glynne Jones, of Glyndyl, Bangor.

DEATHS.

HONEY.—On May 1st, at Shutta, East Looe, Cornwall, Thomas Edward Honey, M.D., Staff Surgeon, R.N. (retired), in his 56th year.
PICKIN.—On April 28th, suddenly, Frederick Harold Pickin, M.R.C.S., L.R.C.P. (late Captain, R.A.M.C.), aged 45 years.
WARD.—On April 30th, at Cardigan-road, Leeds, Edward Ward, F.R.C.S., aged 65 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A CATALOGUE OF EARLY MEDICAL WORKS.

A CATALOGUE of "Early Works on the Sciences of Medicine and Chirurgery," published at intervals by Charles J. Sawyer, Ltd., of 23, New Oxford-street, London, claims, not without good reason, to be the only special list of this class of books issued in Great Britain. But even if this were not so, and if catalogues of this kind abounded, the copy before us would prove of great interest to the medical historian or collector. Among some 400 titles we meet with a tempting *embarras de richesses*, dating in many cases from the epoch immediately following that of early printed books, which ends somewhat arbitrarily in the year 1500. One of the first titles to catch the eye of the curious is the "Practica Nova in Medecina" of Simphorianus Champerius, published in black letter at Leyden in 1517. The work is in its contemporary binding, the boards composed of leaves of MS. covered with a portion of a MS. on vellum. It is a collection of all that has been said concerning every kind of disease by the Greeks, Romans, and Arabs, and the present book is annotated in what appears to be a contemporary hand, which on examination—especially if a signature could be found—might very well prove to be that of Symphorien Champier himself. This famous medical man flourished in the early sixteenth century, was physician to the Duke of Lorraine, and a relative of Bayard the *chevalier sans peur et sans reproche*. He was well known as a historian, and perhaps Bayard may have possessed this volume.

The romance of old books grows on the collector as he examines ownerships as evidenced by old signatures and epigrams in fly-leaves, where surprising discoveries are often made. Another point worth study in old medical works is the illustrated title-page, which is often adorned with curious representations of ancient contemporary practice. The catalogue in front of us reproduces some eight of such scenes. Thus we have a picture from the "Discorsi di Pietro Paolo Magni Piacentino sopra il Modo di Sanguinare" (8vo, bound in limp vellum, Roma, 1586), in which the patient is seen on a curious box-bed in the act of being bled by a barber-surgeon, whose assistant holds tight the end of a ligature, while the physician, in robe and flat cap, looks on in the foreground and ostentatiously avoids touching the figure in front of him. The "De Monstris" of Fortunius Licetus (4to, old calf, Amst., 1665) has a fine title-page, which is probably known to some of us, as it may be found in many medical libraries. The monsters—a woman with five breasts, a child with elephantiasis, and armless men—are shown us on view in a design notable for its artistic composition, vivid lights, and deep shadows.

This Amsterdam edition is far more complete than the earlier ones printed in Padua. Another thick folio of close on 1100 pages has a title-page illustrative of various operations. This is the "Medical Observations of John Schenck," dated at Frankfort in 1609. Such a work may have been known to Shakespeare, as, indeed, others in this collection may have been known to Milton and the great men of the seventeenth century. We can well imagine with what curious interest those old omnivorous men of culture turned over the pages of such a work as Richard Sanders's "Physiognomie and Chiromancie, Metoposcopie, the Symmetrical Proportions, and Signal Moles of the Body," published in London in 1653, or "The Compleat Midwife's Practice, in the Most Weighty and High Concernments of the Birth of Man," 1656. Several of Nicholas Culpeper's works are here offered, and the eighteenth century is well represented, especially with six medical portraits of John Hunter, the charming mezzotint of John Haighton, and a fine old engraved portrait of Garth, after Kneller.

TYPHUS IN SIBERIA, 1919-20.

Captain Francis McCullagh, Royal Irish Rifles, who, captured in Siberia, worked his way through Moscow to England, has written a book of absorbing interest on Russia as she now is, entitled "A Prisoner of the Reds." He cannot tell us how many died of typhus, but he says the mortality (death-rate, probably) was in Siberia in 1918 from 5 to 8 per cent., but in 1920 about 10 per cent. 20,000 cases were reported in the one town of Taiga, two huge piles of unidentified dead bodies were there, one near the station, the other some distance off. 20,000 corpses lay unburied outside another town. In the district between Omsk and Krasnoyarsk practically all the doctors had been attacked, and 50 per cent. had died. One doctor told the author that the highest mortality was amongst middle-aged people engaged in intellectual work, so that the effect on the future education and literary condition of Russia is disastrous, already so shaken by the murders and proscriptions of the Reds. Of 800 staff officers who travelled from Omsk to Krasnoyarsk in a train 26 died. "My whole journey from Omsk to Krasnoyarsk, and from Krasnoyarsk to Moscow was overshadowed by this scourge, as well as by the venereal and other diseases which are fast eating away the vitality of the Russian race, and my fears on the score of typhus were increased by what I saw of the filthy personal habits of the Russians; some of them could not shake the folds of their dress without sprinkling lice on everybody in the immediate vicinity. ..... Going through Russia at the present moment is, owing to typhus alone, as dangerous as going 'over the top' was in France. ..... In the present atmosphere of Russia all human charity withers away. ..... Sometimes when I spoke to a man about his wife or children ..... I heard the phrase 'died of typhus' pronounced in as unconcerned a tone as that in which an Englishman might say, 'Gone to Brighton for the week-end.'" He tells how Trotzky found typhus raging at Ekaterinburg, and causing great losses. He asked the D.M.S. what could be done about it, and listened "with ominous calm" while the D.M.S. placidly told him it would not decrease till April. Trotzky then said with alarming violence, "I am no doctor, but I understand from you that typhus is conveyed by lice. Now, it must be possible to destroy these by some degree of heat that could be produced in some of our public baths, and the soldiers might wash in one part of the bath-house while their clothes are being disinfected in another. I do not believe in fatalism. If I find you do not at once take some steps I will hand you over to the Extraordinary Commission." The Extraordinary Commission is the Commitee of Public Safety, whose prisoners so often fail to reappear. Consequently next day an excellent bathhouse was opened free, and the author had his first bath for three months.

A HANDBOOK FOR THE LIMBLESS.

A USEFUL handbook has just been issued by the "Disabled" Society (48, Grosvenor-square, London, W.1) for the general guidance of ex-Service men of all ranks who have lost one or more limbs. The handbook, which is the work of Captain H. H. C. Baird, D.S.O., is described as a skeleton edition, setting forth the lines along which the next edition will be expanded. The hope is that those who have lost limbs will, in the main, themselves supply the contents of the more comprehensive publication; the provisional edition has been brought out owing to an increasing demand from many quarters for immediate information concerning the supply and use of artificial limbs.

The "Disabled" Society and Its Aims.

The handbook begins by a statement of the advantages obviously to be gained by members of a large society composed of men with similar disabilities; there are approximately 38,000 men who lost a limb or limbs in the recent war, and all are invited to become members and to subscribe to the funds of the Society, which has at present no membership fee. The objects of the Society are briefly as follows:—

1. To assist all who have lost limbs on service, by the collection and registration of all forms of information useful to the wearer of an artificial limb for purposes of trade, business, or recreation.

2. To disseminate this information by means of a handbook posted to the members of the Society, and by publishing from time to time in various journals articles dealing with new types of limbs which may become available.

3. To arrange for lectures, demonstrations, and physical training by experts at centres throughout the country.

4. To organise and maintain a permanent and up-to-date exhibition open to all who have lost a limb, of all the best limbs, appliances, and tools collected from all sources, at home and abroad.

5. To maintain accommodation suitable for the interviewing of members; for the testing of artificial limbs; and for giving instruction in their usage.

6. The aim of the Society is to put its members in the most favourable position for taking their place in the normal life and pleasures of the nation by ensuring that the most suitable limbs are supplied to all.

Medical Advice and Advice from the Disabled.

The Society has made arrangements with St. Thomas's Hospital, London, whereby those with lower-limb amputations can obtain help, advice, and thorough instruction in the use of an artificial limb. Applications for the facilities thus offered should be addressed to the Secretary of the Society, at the address given. Reference is also made in the handbook to the well-known Surgical Supply Depôt, Kensington, which is continuing the work done during the war for the benefit of ex-Service and other

civilian patients. The "Disabled" Society's preliminary researches have already resulted in the collection of much valuable information; a short selection of interesting details supplied by one-legged and one-armed men shows how ingenious the crippled man may be, and how ready he is to help those with disadvantages similar to his own. Although much of the information given cannot, of course, be applied to cases of double amputation, one remarkable instance of perseverance by an armless man is quoted and will doubtless encourage others; this man not only learnt to write with his teeth, but when he received artificial arms taught himself to use a fork, cycle, dig, and play billiards and the piano.

Pensions: The Committee and Local Pensions.

The functions of the Local War Pensions Committees are described, and an extract is given from the First Schedule of the Royal Pensions Warrant of December, 1919, containing detailed regulations regarding pensions, allowances, treatment, constant attendance, initial supplies on discharge from the Service, renewals and repairs, and chairs and tricycles. A note on the fibre-cone "peg-legs" supplied by the British Red Cross completes this useful section.

A brief description is given of the industrial training made available by the Ministry of Labour, together with notes on the Maintenance and Training Grant Scheme, the Business Training Scheme, and the Disabled Soldiers' Sections of Employment Exchanges. The Civil Liabilities Scheme is also explained, and the work of the ex-Service men's adviser. The handbook closes with a few general notes for officers, and with an appeal to all who have lost a limb to support the Society and make it widely known. The price of the handbook is 6*d*., and all proceeds from its sale go to the funds of the Society.

THE BUFF BOOK.

To the Editor of THE LANCET.

SIR,—In reference to your paragraph on this question in the issue of April 30th, I think you will be interested in the following sequence of events:—

1. I informed the publishing company of the decision of the Council of the R.C.V.S. that members would be required to refrain from inserting paid announcements in the Buff Book.

2. The secretary of the publishing company replied, stating that they had decided to include in the Buff Book the names of all professional gentlemen free of charge.

3. I pointed out that the form given in the book referred to "traders," and made no special mention of professional men. I asked whether it was not true that unqualified practitioners, who would be liable to prosecution if they used a professional title, also had the right to the free insertion of their names in the Buff Book, and the further right, denied to qualified members of the professions, to pay for an insertion in the boldest type obtainable. This would be manifestly unfair to the members of the professions, and misleading to the uninstructed public.

4. The managing director replied stating that the secretary was somewhat premature in stating definitely that they had decided to include the names of professional gentlemen free of charge. It was in contemplation, but no decision had been taken. With regard to my question as to the rights of unqualified persons, he agreed that my supposition was correct, and added: "You will readily understand that it is impossible for us to enter into the ethics of professional objections, and having regard to the heavy expenses to which we are put in delivering a free copy to every telephone subscriber we cannot refuse business." He then made the following suggestion: "There is a simple way out of the difficulty and, I think, one that would be of distinct advantage to practising veterinary surgeons—namely, for your Institute to reserve a page or two in the book for qualified surgeons and pay for the same out of the College funds. As there would not be any cost to the company for canvassing, we should be prepared to quote you special terms. Perhaps you will consider this suggestion and let me hear from you? It would, of course, be understood that no advertisement whatever appeared on the pages so reserved."

I have not answered this letter. But one is entitled to wonder whether the manager, who cannot enter into the ethics of professional objections, has visions of the Law Society, the General Medical Council, and the other governing bodies of the professions subsidising the Buff Book and acting as agents in place of canvassers so as to provide the complete lists of professional men with their telephone numbers, while at the same time reserving to himself the right to accept advertisements from any quack who rents a telephone, and to give him a whole page, if he pays for it, in proximity to the lists of qualified men.

I am, Sir, yours faithfully,

FRED. BULLOCK,
Secretary and Registrar, Royal College of
10, Red Lion-square, W.C., May 3rd. Veterinary Surgeons.

CONVALESCENT HOME FOR MIDDLE-CLASS WIVES AND BABIES.

A COTTAGE at Farnham, formerly the home of Sir James Barrie, has been adapted as a convalescent home for six recently confined mothers and their babies. The intention is to help the wives of professional and business men who find it difficult to get suitable and reasonable accommodation. The cottage is well furnished, fitted with radiators as well as open grates, and the presence of an experienced matron, a nursery nurse, and an adequate domestic staff, will ensure to the mother a real holiday before she returns to her home duties. The inclusive terms are 35*s*. a week for the smaller and £2 2*s*. for larger rooms. Special arrangements as to fees can sometimes be made. If desired, a bedroom can be procured for the husbands at Farnham, who can have meals at the cottage at a small payment. Mothers are received on a doctor's recommendation only, and can stay for a period of one to four weeks.

Full particulars can be obtained from the Matron, Black Lake Home, near Farnham, Surrey, but all applications must be made to owner of the cottage, the Hon. Mrs. Gerald S. Montagu, Great Fosters, Egham, Surrey.

THE LIGHTING OF SHIPS.

IN a paper on "Ship-lighting in Relation to Comfort, Safety, and Efficiency," read before the Illuminating Engineering Society on April 26th by Mr. W. J. Jones, the hygienic advantage conferred on ships by the introduction of electric lighting is noted. It diminishes the vitiation of the limited air-supply. The first ship to be recorded as fitted with electric light was built in 1879, and it was about 1883 that electric lighting was introduced into the navy in H.M.S. *Polyphemus*. Mr. Jones emphasises the great advantage of painting the inner surfaces of ships white, as this enables sufficient illumination to be given with fewer lights, and diminishes the glare from naked lamps. The White Star Company having permitted him to examine the illumination of *Olympic*, he found this "distinctly pleasing and comfortable." He quotes the illumination three feet above the deck as follows:—In white painted alleyways (passages) 0·5 candle-power per square foot, in the first-class cabins 1·0, in the first saloon 2·5 candle-power. It will be remembered that the *Olympic* was reported[1] by our own representative to be unusually well ventilated. We are glad to find it urged that white-painting of the inner surfaces of ships results in economy, as it may thus become more usual. It certainly makes a ship more healthy to be white painted within, for she can be, and must be, better cleaned, the white paint "showing up the dirt."

CARAVAN SQUATTERS.

A QUESTION was recently asked in the House of Commons concerning the petition of the Moreton (Cheshire) District Council upon the subject of the caravan settlement in that and adjoining parishes. The settlement is said to contain about 1100 caravans, many of which are only nominally vehicles, being supplied with bogus wheels. During the summer months numerous tents are added, and the population of the settlement is increased to many thousands. The drainage system, latrines, and urinals are described as wholly inadequate and insanitary, and admit of little hope of improvement; the land is below high-water mark, and becomes a quagmire in wet weather. Excreta, washing refuse, and food scraps thus collected attract swarms of flies, and there is grave danger of an epidemic amongst the caravan population and that of the surrounding district, to which the state of affairs has become an intolerable nuisance. Sir Alfred Mond replied to the effect that the local authority had sufficient powers to deal with the serious factors of the situation, and that he was in touch with them concerning the matter.

It is not clear what proportion of this settlement consists of gipsies or to what degree the conditions of the camp are due to their presence. A recent protest by the people of Whitton, in Middlesex, against a small invasion of gipsies was countered by the vicar of the village, who expressed his satisfaction at their large attendance at church and at the reverent behaviour of the crowd which collected at an open-air service held among the caravans. It would seem possible, however, that the caravan town in Cheshire is largely tenanted by victims of the housing shortage, taught by army life to make the best of an unpleasant situation—unless, indeed, experience of strange lands has stirred to life an atavistic wanderlust in the descendants of generations of townsfolk and agriculturists. The best way to avoid creation of such potential centres of disease is to build houses; the man who, in the words of the war artist, "knows of a better 'ole" will generally "go to it."

[1] THE LANCET, 1920, ii., 666.

CENTRAL COUNCIL FOR DISTRICT NURSING IN LONDON.

A DIRECTORY of district nursing and streets list for London, which first appeared in 1917, is now issued at 2*s.* 6*d.*, with a 1921 supplement. It contains, besides a comprehensive list of streets, with an index number indicating the district nursing association from which it is served, the addresses of divisional offices of the Public Health Department of the London County Council and of children's care offices; also particulars of the ambulance service of the Metropolitan Asylums Board. Lists are given of boards of guardians, of boroughs and corresponding Poor-law areas, of city and borough councils, of hospitals (general and special), with addresses and telephone numbers, and of maternity and child-welfare centres. Particulars of nurses attached to religious organisations, associations of midwives, facilities for massage and for material relief in sickness are also added. We note as trivial errors the omission of any hospitals for diseases of the chest among the special hospitals mentioned (pp. 6 and 7), and the fact that the Chartered Society of Massage and Medical Gymnastics is still alluded to under its old name (p. 8).

HOW NOT TO PREPARE A MEDICAL ARTICLE.

WE referred last week to a useful pamphlet drawn up by the Publications Department of the Medical Research Council containing a series of Notes upon the Preparation of Monographs and Reports for Publication by the Council. With the advice therein given we cordially concur except that we should much prefer the abbreviation of the gramme and its derivatives to follow the procedure laid down by the Council of the Chemical Society, i.e.:—

> kilogramme, kg. or 1000 g.;
> gramme, g.;
> centigramme, cg. or 0·01 g.;
> milligramme, mg. or 0·001 g.;

and not kgm., gm., cgm., mgm. as given in the Notes. And we should have welcomed some warning against the tendency to spurious accuracy in giving decimal fractions of more significant figures than are justified by the number of cases dealt with.

The March issue, we are now reminded, of the *American Journal of Surgery* contains an opportune leading article on how *not* to prepare a medical article which inculcates the same lessons in the Belloc method of a cautionary tale. A few extracts from this entertaining publication may induce our readers to turn to the original, which opens with the advice:—

> If you feel the urge—or the need—to write a medical article, *don't—don't restrain yourself* merely because you have nothing new to say and hardly know how to say it! Facts and theories in medicine must be repeated again and again to drive them home. Remember that not all your colleagues read the same text-books that you do, and therefore it is your duty to disseminate their information. If, at the eleventh hour, you have hastily scratched off a "pot-boiler" as your contribution to a "symposium," don't waste it on the limited audience of a medical society—publish it!

Another paragraph treats of the choice of language for a medical article in a manner reminiscent of Lewis Carroll's reminder to the would-be poet: Then, fourthly, there are epithets that suit with any word, as well as Harvey's Reading Sauce with fish, or flesh, or bird:—

> There are certain words and expressions that belong in every medical article. Be sure to use them. These are: "Cito, tuto et jucunde," "fons et origo," "pari passu," "marked," "throws light," "presented," "examination revealed," "symptom-complex," "interesting and instructive," "significant observation," "points out," "unexplored fields." (There is room in almost every article to scatter a few small "fields.") When reporting a case refer frequently to "patient," but never write "the patient died"; say "ceased" or "exitus lethalis."

The advice given to the author on the difficult subject of references is full of subtle malice, and we could wish that it had no applicability to cis-Atlantic writers:—

> Embellish your article with references. If you wish, you may add to it a bibliography taken from a recent paper on the same subject. If that is not convenient you may, on the other hand, simply append the names of a few text-books without indicating what parts of them are concerned. Either way is acceptable, under the rules. If you quote or refer to a few publications, gather these titles at the end of the manuscript and label them sententiously "bibliography," not merely "references." Don't bother to read these publications in the original, nor to verify the accuracy of the references themselves, or of their dates, or of the authors' names. Especially avoid any uniformity in arranging these titles. Abbreviate the names of journals in as many different ways as you can. Give only the volume number, not the date; the reader can discover in a library what year the article was published. References to articles in weekly journals, however, should be simply by the year and the page number; anyone that wants to can find out for himself whether it was in the first or second volume of that year. Don't spend ten cents to buy the little pamphlet on *The Bibliographic Style of the Journal of the A.M.A.*; you might be tempted to follow its scheme of abbreviations of journal titles. Establish your own style, or, better yet, avoid all style.

Finally, the need of a revised medical dictionary is indicated in which Temperature shall be synonymous with Fever, Pathology used to indicate the Disease removed from an organ at operation, and Wassermann, Babinski, and Romberg stand for reactions (or "pathologies"), and not for once distinguished physicians and investigators.

A MEMORIAL TO THE LATE DR. ERNEST ROBERTS.

AN appeal is being issued by the Minories (Stepney) Centre of the Women's League of Service for Motherhood for an endowment fund of £6000 as a memorial to the late Dr. Ernest Roberts, the founder of the Centre, who died last year. The scope of the work includes infant consultations, clinics, medical advice and dental aid for mothers; dinners for expectant and nursing mothers; a creche; supply of clothing for children (at cost of materials); needlework, nursing, and other classes. Concerts and entertainments for the mothers are arranged, and home visiting is done by a trained nurse. Medical clinics and country convalescent holidays for specially delicate children have hitherto been financed by Dr. Roberts himself, save for the mothers' small contributions. His brothers have undertaken to help the drug department; for the Children's Country Convalescence Fund extra help is required. Contributions should be sent to the honorary treasurer, Mrs. W. B. Gladstone, 32, Prince's Gardens, London, S.W.7.

COLONIAL HEALTH REPORTS.

Jamaica.—In the report for 1919-20 the population is estimated at 893,580. The birth-rate worked out at 33·5 and the death-rate at 22·2 per 1000. Of the total deaths 32·6 were those of children under 2 years of age, and of these 24·4 were those of children under 1 year. The principal causes of death among the inhabitants of Kingston, the capital, were: Phthisis, 11·3; diarrhœa and enteritis, 10·4; heart disease, 7·0; atrophy, icterus, and scleroma of the new-born, 6·9; pneumonia, 4·0; influenza, 3·2. Matters in connexion with health and sanitation have been receiving for some time past the earnest attention of the Government, and active steps were taken during the year. The Rockefeller Foundation began extensive operations in connexion with the treatment of hookworm, and the United Fruit Company inaugurated a system for medical attendance on their employees. A great diversity of climate is obtainable in the island. From a tropical temperature of 80° to 86° F. at the sea coast the thermometer falls to 45° and 50° on the tops of the highest mountains, and with a dryness of atmosphere particularly delightful and suitable to the most delicate constitution. There are many mineral springs, some of them possessing valuable qualities for the cure of various diseases and infirmities of the body; the two principal are the spring at Bath, in St. Thomas-in-the-East, and the spring at Milk River, in Clarendon.

British Guiana.—In the year 1919, when the population was estimated at 305,991, the birth-rate was 26·0 and the death-rate 40·4 per 1000. The deaths of children under 1 year of age were 185 per 1000 births. The following table shows the variation of the birth- and death-rates amongst the different races:—

—	Birth-rate.	Death-rate.
Portuguese	23·0	35·5
Europeans other than Portuguese ...	10·9	10·1
East Indians	24·6	49·3
Chinese	28·0	31·2
Blacks	26·8	33·2
Mixed races	27·2	22·4

Enteric fever is a notifiable disease, and during the year 524 cases were notified with 112 deaths. Anti-malaria and anti-mosquito measures are being generally and gradually enforced, with visible signs of success. In 1906–7 33,748 cases of malarial fever were treated in the sugar estates' hospitals; in 1919 the numbers fell to 7046. Quinine has been for some years sold at all post offices to the general public at cost price. It is also distributed by the sugar estates free to their labourers. Ankylostomiasis, which has engaged the attention of the Medical Department for several years, has considerably decreased on the sugar estates; this is attributed to improved sanitary measures and the erection of latrines. There were 683 patients in the public hospitals at the beginning of 1919, and during the year 15,007 were admitted. There were 1634 deaths. Out-door treatment was given to 48,697 persons. At the leper asylum there were at the beginning of 1919 194 males and 76 females—total 270—and during the year 72 more were admitted. The total rainfall for the calendar year at the Botanic Gardens, Georgetown, was 84·16 inches, and the total amount of bright sunshine recorded during the year was 2602·7 hours.